



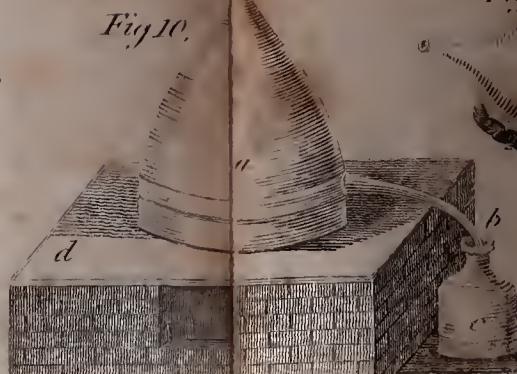
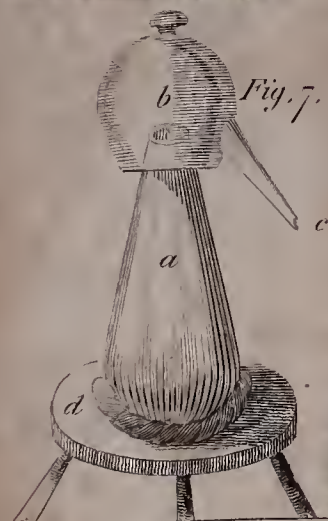
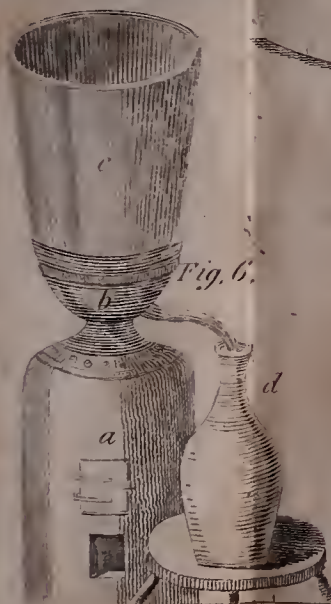
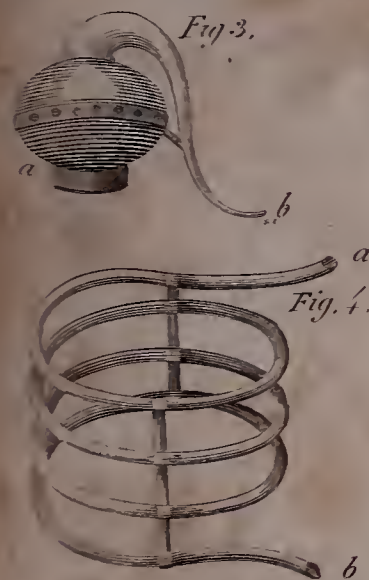
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THE COMPLETE DISTILLER:

CONTAINING,

- | | |
|---|--|
| I. The Method of performing the various Processes of Distillation, with Descriptions of the several Instruments: the whole Doctrine of Fermentation: the Manner of drawing Spirits from Malt, Raisins, Molasses, Sugar, &c. and of rectifying them: with Instructions for imitating, to the greatest Perfection, both | the Colour and Flavour of French Brandies.
II. The Manner of distilling all Kinds of Simple Waters from Plants, Flowers, &c.
III. The Method of making all the Compound Waters and rich Cordials so largely imported from France and Italy; as, likewise, all those now made in Great Britain. |
|---|--|

TO WHICH ARE ADDED,

ACCURATE DESCRIPTIONS

OF THE

*Several Drugs, Plants, Flowers, Fruits, &c.,
used by Distillers;*

AND

INSTRUCTIONS FOR CHOOSING THE BEST OF EACH KIND.

The whole delivered in the plainest Manner,

FOR THE USE BOTH OF

DISTILLERS AND PRIVATE FAMILIES

ILLUSTRATED WITH A PLATE.

BY A. COOPER, DISTILLER

A NEW EDITION, ENLARGED.

LONDON:

PRINTED FOR VERNOR, HOOD, AND SHARPE, 51, POULTRY; J. CUTHELL, MIDDLE-ROW, HOLBORN; LONGMAN, HURST, REES, AND ORME, PATERNOSTER-ROW; AND B. CROSBY AND CO. STATIONERS' COURT.

1810.



P R E F A C E.



IT is now some years since I first formed a design of compiling a Complete System of Distillation; and accordingly read most of the treatises on that subject, and extracted from each what I thought necessary for my purpose, proposing to supply the defects from my own experience. It is, however, more than probable, that this design had never been executed, had not a *French* Treatise of Distillation fell into my hands; but finding in that book many useful observations, and a great number of recipes for making various sorts of compound waters and cordials, I determined to finish the work I had begun, being now enabled to render it much more useful than it was possible for me

otherwise to have done. What translated from this author, will say, be kindly received by our as the manner of making many o reign compound waters, &c. h before been published in the *Eng* guage. And, I flatter myself, if ral hints interspersed through this are carefully adverted to, Distilla be carried to a much greater d perfection than it is at present; celebrated compound waters and of the *French* and *Italians*, imp so great an expence, and such d to the trade of this nation, may in *England*, equal to those manu abroad.

My principal intention being t this Treatise useful to all, I have voured to deliver every thing plainest and most intelligible Beauty of style is not, indeed, t

pected in a work of this nature; and, therefore, if perspicuity be not wanting, I presume the Reader will forgive me, if he meets with some passages that might have been delivered in a more elegant manner. I have also, for the same reason, avoided, as much as possible, terms of art, and given all the recipes in words at length.

Distillation, though long practised, has not been carried to the degree of perfection that might reasonably have been expected. Nor will this appear surprising, if it be considered that the generality of distillers proceed in the same beaten track, without hardly suspecting their art capable of improvements, or giving themselves any trouble to inquire into the rationale of the several processes they daily perform. They imagine that the theory of Distillation is very abstruse, and above the reach of common capacities; or, at

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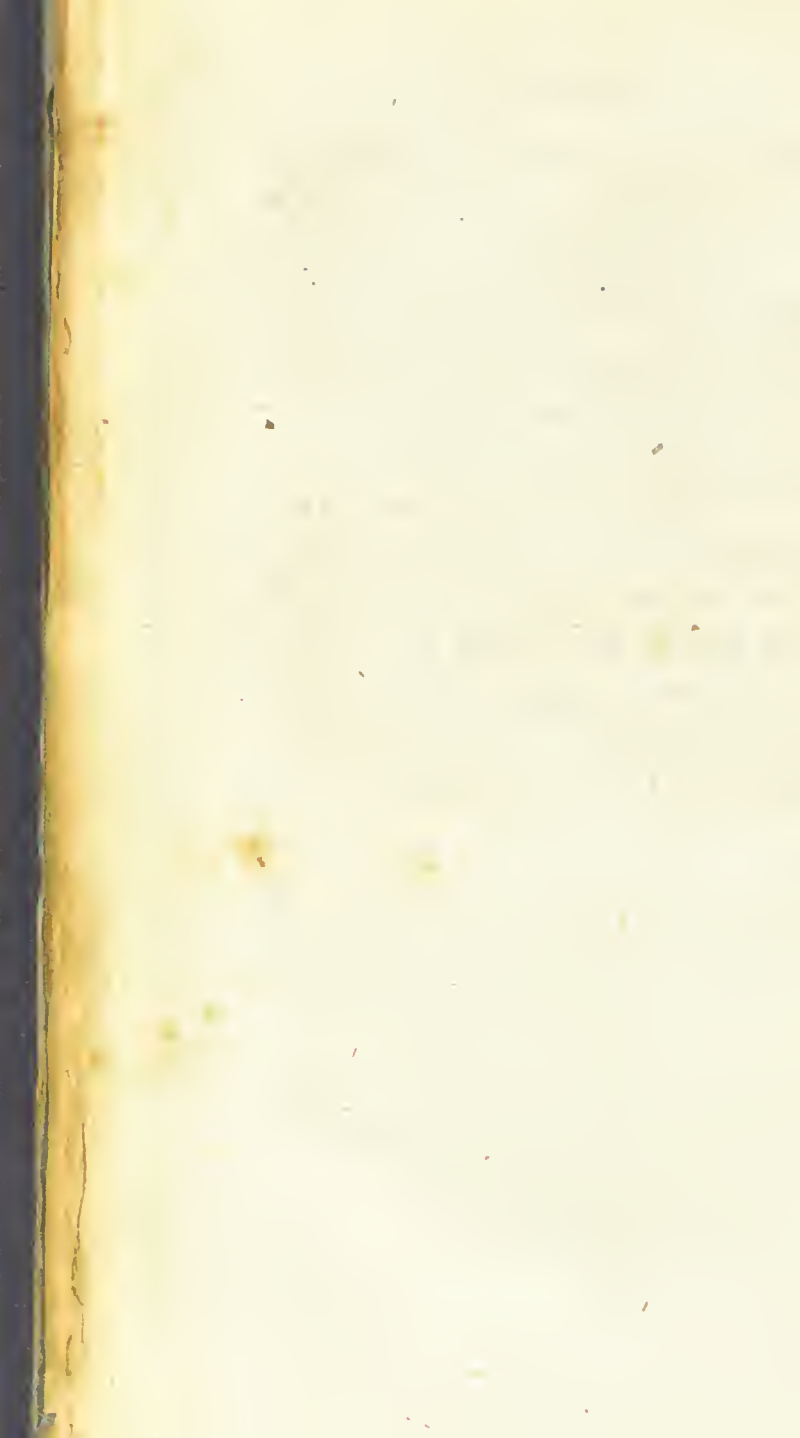
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I have, therefore, endeavoured in
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proceed on rational principles, an
his inquiries in such a manner as
fail of leading him to such discov
his profession, as will be attended v
vantage both to himself and his co

But it is not to those only wh
Distillation their profession, that
laboured to render this Treatise u
have also endeavoured to extend i

to those who distill simple and compound waters for their own use, or to distribute to their indigent neighbours. And for this reason I have adapted most of the recipes to small quantities, and briefly enumerated the virtues and uses of each composition.

The short descriptions of the most capital ingredients, and the directions for choosing the best of each kind, I flatter myself, will not be considered as improper ; because the goodness of every composition must in a great measure, depend on the goodness of the ingredients.



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A

COMPLETE SYSTEM

or

DISTILLATION.

DISTILLATION is the art of separating, or drawing off the spirituous, aqueous, and oleaginous parts of a mixt body from the grosser, and more terrestrial parts, by means of fire, and condensing them again by cold.

We shall therefore divide this Treatise into three parts; in the first, we shall explain the method of distilling spirits from various substances; in the second, the manner of drawing simple waters; and in the third, the best methods of making cordial or compound waters.

PART I.

OF THE DISTILLATION OF SPIRITS.

BY the distillation of spirits is understood the art by which all inflammable brandies, ruins arracks, and the like are extracted from vegetable substances, by means of a previous fermentation, and a particular treatment of the fermented liquor by means of a cold, or hot still, with its proper work, and a refrigeratory.

But as it is impossible to extract spirits from any vegetable subject without a previous fermentation, and previous to this, Brewing is necessary, it will be requisite first to perform these operations.

CHAP. I.

Of Brewing, in order to the Production of inflammable Spirits.

BY Brewing, we mean the extraction of spirit from some vegetable substance, by means of steeping it in hot water, by which means it is rendered proper for a vinous fermentation.

A solution, or fermentable tincture of this kind, may be procured, with proper management, from any vegetable substance, but the more readily and totally it dissolves in the fluid, the better it is fitted for fermentation, and the larger its produce of spirits. All inspissated vegetable juices therefore, as sugar, honey, treacle, manna, &c. are very proper for this use, as they totally dissolve in water, forming a clear and uniform solution; but malt, for its cheapness, is generally preferred in England, though it but imperfectly dissolves in hot water. The worst sort is commonly chosen for this purpose; and the tincture, without the addition of hops, or trouble of boiling it, is directly cooled and fermented.

But in order to brew with malt to the greatest advantage, the three following particulars should be carefully attended to: First, The subject should be well prepared; that is, it should be justly malted, and well ground: for if it be too little malted, it will prove hard and flinty; and consequently only a small part of it dissolve in the water: and, on the other hand, if too much malted, a great part of the finer particles, or fermentable matter, will be lost in the operation.

With regard to grinding, the malt is reduced to a kind of coarse meal; for which has shewn, that by this means, the substance of the malt may, through the process, continue mixed with the tincture distilled with it; whereby a larger spirit will be obtained, and also great trouble, time, and expence, in breaking. This secret depends upon thoroughly and briskly agitating the meal, first in cold and then in hot; and repeating this after the fermentation is finished: when the turbid wash must be immediately collected in the still. And thus the two operations of Grinding and Fermenting may very commodiously be reduced to one, to the no small profit and advantage of the distiller.

The second particular to be attended to is, that the water be good, and proper. Rain water is the best adapted to this purpose. It not only extracts the tincture of the matter than any other, but it also abstracts the most valuable parts, whereby the operation is improved, and the yield of the spirit increased. Next to that of rain is the water of springs and lakes, particularly such as wash any

a fertile country, or receive the sullage of populous towns. But whatever water is used, it must stand in a hot state upon the prepared malt, especially if a clear tincture be desired : but the greatest care must be taken to prevent the malt from running into lumps or clods ; and, indeed, the best way to prevent this is to put a small quantity of cold water to the malt first, and mix them well together, after which the remaining quantity of water may be added in a state of boiling, without the least danger of coagulating the malt, or, what the distillers call, making a pudding.

It has been found by experience, that a certain degree of heat is necessary to extract the whole virtue of the malt ; this degree may, by the above method, be determined to the greatest exactness, as the heat of boiling water may at once be lessened to any assigned degree of warmth, by a proper addition of cold water due regard being had to the season of the year, and the temperature of the air. This improvement, with that mentioned above, of reducing the two operations of Brewing and Fermentation to one, will be attended with considerable advantage.

With regard to the proper quantity of water, it must be observed, that if too little be used, a viscid clammy mixture will be produced, which is disposed to ferment, nor capable of extracting all the soluble parts of the malt. On the other hand, too much water renders the liquor thin and aqueous, and by that means increases the trouble and expence in all parts of the process. A due medium, therefore, should be observed; and experience has shewn, that about the goodness of that described by the London brewers for ten shilling barley, will answer the distiller's purpose. When the quantity of water is mixed with the malt, the whole mass must be well agitated, that the soluble parts of the malt may often be brought in contact with the aqueous fluid, which is to be saturated after standing a proper time, and then drawn off, fresh water poured on, and the operations repeated, till the whole viscid matter and charine sweetness of the malt is extracted, leaving only a fixed husky matter remaining, which is of being dissolved by either hot or cold water.

The third requisite particular is, that certain additions be used, or alterations made, according to the season of the year.

vention of the operator. The season of the year is very necessary to be considered. In the summer, the water applied to the malt must be colder than in the winter; and, in hot sultry weather, the tincture must suddenly be cooled, otherwise it will turn eager; and, in order to check the too great tendency it has to fermentation, when the air is hot, it will be necessary to add a proper quantity of unmalted meal, which being much less disposed to fermentation than malt, will greatly moderate its impetuosity, and render the operation suitable to the production of spirits, which by a too violent fermentation, would in a great measure be dissipated, and lost.

CHAP. II.

Of Fermentation.

THE tincture, or, as the distillers call it, the wash, being prepared as in the foregoing chapter, it is next to be fermented; for, without this operation, no vinous spirit can be produced.

By fermentation is meant that intestine motion performed by the instrumental efficacy of water, whereby the salt, oil, and earth of a fermentable

mentable subject, are separated, and transposed, and again collected, and used in a particular manner.

The doctrine of fermentation, is of the greatest use, and should be well understood by the distiller, as it is the very basis of the art. Perhaps, if more attended to, a more pure spirit, as well as a greater quantity of it, may be procured from the same materials at present. We shall therefore lay down the precise theory of fermentation, before we proceed to deliver the practice.

Every fermentable subject is composed of salt, oil, and a subtle earth; but these particles are so small, that, when asunder, they are imperceptible to the senses; and, therefore, when mixed with an aqueous fluid, they form a transparent; neither have fermentation any taste, except that of sweetness.

These particles are each composed of oil, and earth, intimately mixed in a perfect cohesion, connexion, and union; and therefore, when any one of those principles much abounds in any subject, so that

mate union is prevented, the whole efficacy of the fermentation is either stopped or impaired, or at least limited to one certain species.

This equal connection of salt, oil, and earth, into a single compound particle, forms a corpuscle soluble in water; or to speak more philosophically, this compound corpuscle is by means of its saline particles, connected with the aqueous corpuscles, and moved up and down with them. But where these corpuscles are not thus connected with the water, a number of them join together, and form either a gross, or a loose, chaffy, and spongy matter.

When these compound particles are diluted with a small quantity of an aqueous fluid, they feel slippery, clammy, and unctuous to the touch, and effect the taste with a kind of ropy sweetness. And when a proper quantity of the fluid is added, a commotion is presently excited, and afterwards a subtle separation.

This commotion and separation first begins in the whole substance; for before the addition of water, the subject may remain in dry, solid, and large pieces, as in malt, sugar, &c. which

being reduced to powder, each grain an agreement of many smaller corpuscles; these being put into water and separately float therein, till at last become so small as to be invisible, thicken the consistence of the liquor.

These corpuscles being thus separated one another, there next ensues a separation of their component particles; that is, the oil, and the earth, are divided by the action of the aqueous particles.

The first commotion is no more than a solution; for the saline particles being dissolvable in water, they are immediately held of by the aqueous particles, and move about with them. But the succeeding motion, or fermentative motion, is a very different thing; for by this the saline particles are separated from those of oil and earth, partly by the force of the others in their motion, and partly by the force of the aqueous particles, which are continually meeting and dashing against them.

This motion is performed by the action of the fluid, or aggregate of an infinite number of particles.

tielles, in actual and perpetual motion ; their smallness being proportionable to that of the fermenting corpuscles, and their motion, or constant susceptibility of motion, by warmth, and the motion of the air, disposing them to move other subtle moveable corpuscles also. The certain agreement of figure, or size, between the aqueous partieles, and those of the salt in the fermentable subject, tends greatly to increase this commotion ; for, by this means, they are readily and very closely connected together ; and therefore move almost like one and the same compound corpuscle : whilst the water is not at all disposed to cohere immediately with either the oil or earth. And thus an unequal concussion is excited in the compound corpuscles of the fermentable subject ; which concussion at length strikes out the saline particle, loosens the others, and finally produces a separation of the original connexion of the subject.

An aqueous fluid, therefore, is the true, and indeed, the only instrument for procuring a fermentable motion in these compound corpuscles of the subject ; for were an oily fluid poured upon any fermentable subject, no vinous fermentation would ensue ; as the oil could neither

give a sufficient impulse on the compound corpuscles, which are grosser than its constituent particles, nor divide the oily particles of the subject from their connection with the others, which detain, and, by an envelope or defend them from its action.

The compound corpuscles of the fermentable subject being affected by the perpetual motion of the particles of the aqueous fluid, a certain degree of motion is necessary, or that the corpuscles move with a proper degree of velocity. This principally depends on external heat. A considerable degree of cold, indeed, will absolutely prevent fermentation, though it greatly retard it; and a boiling heat will stop it still more. A tepid, or middle degree, between freezing or boiling, is the most proper for promoting and quickening the operation.

The admission of air, also, though not an absolute necessity, yet greatly promotes and quickens the action, as being a capital instrument in putting in a proper degree of motion to the particles of the subject. But whilst it contributes to hasten the effect, it cau

same time by its activity some remarkable alterations in the oily particles; for it not only moves, but absolutely dissolves and displaces them from their original connexions: and thus carries them off with itself from the whole mass. And, therefore, though the consideration of the air does not so properly belong to fermentation in the general, yet it does in particular; as having an accidental power to alter every species of this operation: consequently its agency ought to be well understood, either to procure alterations at pleasure in the fermenting mass, or to prevent and correct impending dangers.

The oily particles thus separated and dissolved by the air, are also elastic, though they probably derive that property from their intercourse with the air itself, and their being rendered extremely minute.

When, therefore, an aqueous fluid is added to a fermentable subject, exposed to a temperate heat, a fermentative struggle immediately arises, the saline part of the compound particles being dissolved by the continual intestine motion of the water, and carried up and down with it in all directions, amidst an infinite number of
other

other particles, as well fermentable, as the others; whence, by this collision and the saline particles are dissolved and separated from their connexion with the oily and earthy ones. And as the oily particles are the most elastic, they would, by this means, be driven up to the surface of the liquor, and be supported by the air, were they not closely connected with the earthy ones, whose gravity prevents their evaporation, and, by coming in contact with others of the same kind, form aggregates, which sink down with the oily particles to the bottom. But before these can form aggregates large to be supported by the water, many of the oily particles are, by their frequent collision with the aqueous fluid, separated from the earthy ones: and by degrees, more strongly connected again with the saline ones; whilst, on the other hand, the same saline particles imbibe the earthy ones, which being left single, undergo their separation from the oily particles, and float about separately in the fluid.

And hence proceed the several different sequences of fermentation; viz. 1. The separation of the saline particles of the fermentable subject proceeds the tart, saline,

taste of the liquor; which is more sensible at first, before the liquor is duly composed and settled, or the due arrangement and connexion of the saline particles with those of the oily and earthy kinds, completed: after which the liquor proves milder, softer, or less pungent. 2. From the oily particles being set at liberty, proceeds the strong smell of the liquor, and the head or shining skin upon the surface. 3. The earthy particles collecting together in clusters, cause the fluid to appear turbid, and afterwards a visible earthy, or clay-like matter to be precipitated: and some of the earthy parts, in their motion, arriving at the head, or oily skin on the surface, cause it to thicken; and afterwards taking it down along with it, thus constitute the lees which abound in oil. 4. From this new struggle or collision, which is productive both of solution, and a new connexion in the saline and earthy corpuscles, proceeds the ebullition in fermentation. And, lastly, by the same repeated coalition of the oily with the aqueous and saline particles the inflammable spirit is produced.

Having thus laid down a concise theory of fermentation, we shall now proceed to the practice.

The

The wash being brought to a tepid warm state in the backs, a proper quantity of good-conditioned ferment is added; if the ferment be solid, it should be previously broken into small pieces, and gently thinned with the hand, wisp, &c. in a little of the liquor. A complete and uniform solution, however, should not be attempted, because it would greatly weaken the power of the ferment, or destroy its future efficacy. The intended quantity, therefore, being thrown into the liquor, mixed with a moderate parcel of the liquor, is kept in a tepid state, either by setting it over the fire, or otherwise, and free from the rude commerce of the external air; meanwhile the insensibly warm liquor ought to be stirred at proper intervals, till at length, the whole quantity is properly set to working together; thus, by dividing the business into parcels, it is much more speedily and effectually performed, than by attempting it all at once.

The whole quantity of liquor being now set to work, secured in a proper degree of heat, and defended from a too free intercourse with the external air, nature itself, as it were, finishes the process, and renders the liquor fit for

By ferments, we mean any substance, which, being added to any rightly disposed fermentable liquor, will cause it to ferment much sooner and faster than it would of itself; and, consequently, render the operation shorter; in contradiction to those abusively called so, which only correct some fault in the liquor, or give it some flavour. Hence we see, that the principal use of ferments is to save time, and make dispatch in business; whilst they only occasionally, and, as it were by accident, give a flavour and increase the quantity of spirit. And, accordingly, any fermentable liquor, may, without the addition of any ferment, by a proper management of heat-alone, be brought to ferment, and even more perfectly, though much slower, than with their assistance.

These ferments are, in general, the flowers and fæces of all fermentable liquors, generated and thrown to the surface, or deposited at the bottom, either during the act of fermentation, or after the operation is finished.

Two of these are procurable in large quantities, and at a small expence; we mean beer-yeast and wine-lees; a prudent and artificial management,

ment, or use of which, might render of distillation much more facile, certainly advantageous.

It has been esteemed very difficult and discouragement, in the business of to procure a sufficient stock of these and preserve them at all times ready. The whole secret consists in dextero the matter from its superfluous moisture; because in its fluid state, it is subject to fermentation, which is productive of putrefaction; in which state it becomes intolerably stid and cadaverous.

The method of exposing it to the sun has acquired a proper consistence, in order to avoid great inconveniences; and so peculiar a management necessary, that it succeeds.

The best way, therefore, is to press it slowly and gradually, in a thick, strong canvas bag, after the manner of lees, by the tail-press, till it becomes a cake; which, though soft, will easily break dry and brittle between the fingers.

ing reduced to that consistence, and closely packed up in a tight cask, it will remain a long time uncorrupted, preserve its fragrancy, and consequently, fit to be used for fermenting the finest liquor.

The same method is also practicable, and to the same advantage, in the flowers or yeast of wine; which may be thus commodiously imported from abroad: Or, if these cannot be procured, others of equal efficacy may be procured from fresh wine-lees, by barely mixing and stirring them into a proper warm liquor; whence the lighter, or more volatil and active parts of the lees, will be thrown to the surface, and may easily be taken off, and preserved, by the above-mentioned method, in any desired quantity. And hence, by a very easy process, an inexhaustible supply of the most useful ferments may be readily and successively procured, so as to prevent for the future all occasion of complaint for want of them, in the distiller's business.

Experience has demonstrated, that all ferments abound much more in essential oil, than the liquor which produced them: and, consequently,

quently, they retain, in a very high degree, the smell and flavour of the subject. It is a requisite, before the ferment is applied, to consider what flavour is intended to be imparted, or what species of ferment is most proper for the liquor.

The alteration thus caused by fermentation is considerable, as to render any neutral spirit of any palatable liquor of the same flavour with that which yielded the ferment. This observation is of much greater moment than will probably be conceived; for a new scene is hereby opened, both in the business of distillation, and in the depending upon fermentation. It may, however, be observed, that its benefit does not extend to malt, treated in the common manner, nor to any other subject but what yields a spirit tolerably pure and tasteless: For, otherwise, instead of producing a simple, uniform flavour, it causes a compound, and unnatural one. How far the fine spirit merchant profits by it, well deserves his attention. Whether our native cyder spirit, crab apple, &c. which have very little flavour of their own, may not, by this artifice, be brought nearer to, entirely, into the state of some foreign

so highly esteemed, is recommended to experience.

It is common with distillers, in order to increase the quantity of spirit, to give it a particular flavour, or improve its vinosity, to add several things to the liquor, during the time it is in a state of fermentation; and these additions may properly be reduced to salts, acids, aromatics, and oils.

All rich vegetable juices, as treacle, honey, &c. which either want a natural acid, have been deprived of it, or contain it in too small a quantity, will be greatly improved by adding, at the beginning of the operation, a small quantity of the vegetable or fine mineral acids; as oil of sulphur, Glauber's spirit of salt, juice of lemons, or an aqueous solution of tartar. These additions will either give, or greatly improve the vinous acidity of the subject, but not increase the quantity of the spirit, that intention being performed by aromatics and oils.

All pungent aromatics have a surprising quality of increasing the quantity of the spirit, as well as in altering, or improving the flavour;
but

but their use requires that the fermentation should be performed in close vessels. If a large quantity be intended to be added, it must be taken not to do it all at once, lest the oiliness of the ingredients should check the fermentation. But if the flavour be the principal object, they should not be added till the fermentation is nearly finished. After the same manner, a considerable quantity of any essential oil may be converted into a surprising quantity of inflammable spirit; but great caution is here also necessary not to drop or add too large a quantity at a time, as this would damp the fermentation; the surest method of checking, or totally stopping this operation, at any point of time. The best method, therefore, of adding oil, so as to avoid all inconveniences, is to mix the oil in a mortar with sugar, which they call making an *Oleasaccharum*, by which the tenacity of the oil will be destroyed, and the whole readily mix with the liquor, and immediately ferment with it. The distiller would do well to consider these observations attentively, and may thence form an advantageous method of increasing the quantity of spirits, and at the same time greatly improve their quality and

But in order to put these observations in practice, particular regard must be had to the containing vessel in which the fermentation is performed, the exclusion of the air, and the degree of the external heat or cold.

With regard to the containing vessel; its purity, and the provision for rendering it occasionally close, are chiefly to be considered. In cleansing it, no soap, or other unctuous body should be used, for fear of checking the fermentation; and, for the same reason, all strong alkaline lixiviums should be avoided. Lime-water, or a turbid solution of quick-lime may be employed for this purpose, without producing any ill effect; it will also be of great service in destroying a prevailing acetous salt, which is apt to generate in the vessels when the warm air has free access to them; and tends to pervert the order of fermentation, and, instead of a wine or wash, produce a vinegar. Special care must also be had, that no remains of yeast, or cadaverous remains of former fermented matters, hang about the vessels, which would infect whatever should be afterwards put into them; and cannot, without the utmost difficulty, be perfectly cured and sweetened.

The

The occasional closeness of the vessel, in the large way, be provided for, properly adapted; and, in the small way, valves, placed in light casks. These occasionally give the necessary vent to the vessel, during the height of the fermentation; the vessel otherwise remaining close, and impervious to the air.

It is a mistake of a very prejudicial nature, in the business of fermentation, to suppose that there is an absolute necessity for a constant admission of the external air. The experience is the truth, and very great advantage is found by practising according to the contrary opinion. A constant influx of the external air, it does not carry off some part of the spirit already generated, yet certainly catches and dissipates the fine, subtile, or oleaginous saline particles, whereof the spirit is composed; thus considerably lessens the quantity of spirit. In close fermentation this inconvenience is avoided; all air, except that included in the liquor, being excluded. The whole secret is, leaving a moderate space for the air above the liquor in the vessel, unpossessed by the liquor. When the liquor is once fairly at work to bur-

close, and thus suffer it to finish the fermentation, without opening or giving it any more vent than that afforded it by a proper valve placed in the cask ; which, however, is not of absolute necessity, when the empty space, or rather that possessed by the air, is about one-tenth of the gage ; the artificial air, generated in the operation being then seldom sufficient to open a strong valve, or at most not to endanger the cask.

This method may be practised to good advantage by those whose business is not very large ; but it requires too much time to be used by the large dealers, who are in a manner forced to admit the free air, and thus sustain a considerable loss in their quantity of spirit, that the fermentation may be finished in the small time allowed for that purpose. It may, however, be said, that the silent, slow, and almost imperceptible vinous fermentation, is universally the most perfect and advantageous.

During the whole course of this operation, the vessel should be kept from all external cold, or considerable heat, in an equal, uniform, and moderate temperature. In the winter, a stove room, such as is common in Germany, would be

very convenient for this purpose, being placed at a proper distance from the fire, but at other seasons no particular care is necessary with us in England, if the vessel for the business be but well defended from the summer's heat, and the ill effects of bleak northern winds.

The operation is known to be performed by the hissing, or small bubbling noise no longer heard, upon applying the ear to the vessel; and also by the liquor itself applied to the eye, and having a pungent smell to the tongue. And that it may fully possess the properties, and be well fitted to yield a perfectly vinous spirit by distillation, it should be suffered to stand at rest in a some place, if practicable, than that in which it was fermented; till it has thoroughly decanted, and cleansed itself of the gross lee, and become perfectly transparent, vinous and fragrant. In this state it should be committed to the still, the spirit obtained will not only exceed that obtained in the common way in quantity, but in fragrance, pungency, and vinosity.

CHAP. III.

Of Distillation in general.

HAVING in the two preceding chapters laid down the best methods of brewing and fermentation, we shall now proceed to the method of distillation.

And in order to lead our readers methodically through the path which lies before them, we shall begin with explaining the principles of distillation; or, the method of extracting the spirituous parts of bodies.

To extract the spirits is to cause such an action by heat, as to cause them to ascend in vapour from the bodies which detain them.

If this heat be natural to bodies, so that the separation be made without any adventitious means, it is called fermentation, which we have already explained.

If it be produced by fire, or other heating power, in which the alembic is placed, it is called

led digestion, or distillation; digestion by heat only prepares the materials for the separation of their spirits; and distillation by fire action is of sufficient efficacy to cause them to ascend in vapour, and distil.

This heat is that which puts the parts of a body, whatever it be, in motion, divides them, and causes a passage for the spirits inclosed herein, by disengaging them from the phlegm, and the earthy particles they are inclosed.

Distillation considered in this light is certainly worthy the attention and countenance of the learned. This art is of infinite extent, whatever the whole earth produces, flowers, fruits, seeds, spices, aromatic and vulneraries, odoriferous drugs, &c. are its objects, and all under its cognizance; but we generally reduce it to liquids of taste and smell; and to volatile and spirituous waters of aromatic and mineral plants. With regard to its utility, we omit saying any thing here, as we will give sufficient proofs of it in the sequel.

CHAP. IV.

Of particular Distillation.

DISTILLATION is generally divided into three kinds; the first is called distillation *per ascensum*, which is, when the fire, or other heat, applied to the alembic, containing the materials, causes the spirit to ascend. This is the most common, and indeed almost the only kind used by distillers.

The second is called distillation *per descensum*; which is, when the fire being placed upon the vessel precipitates, or causes the spirit to descend. This kind is hardly ever used by distillers, but to obtain the essence or oil of cloves.

The third is termed distillation *per latus*, or oblique distillation; but this being used only by the chemists, we shall say nothing farther of it here.

With regard to the different methods of distillation, occasioned by the different vessels, or materials made use of to excite heat, improperly

called distillation; they are of various kinds, which shall be explained as they occur in the sequel.

There are various kinds of distillation, which arise from the different construction of the alembics; such are the distillation in a common alembic, with a refrigerator, the serpentine alembic, and others are produced from the heat of the alembic; such as the distillation of *Maricæ*, the vapour, the sand, the du, lime baths.

These different methods of distillation shall be explained in enumerating the operations, and they are most proper; and proceed to the different forms of alembics and their instructions.

CHAP. V.

Of Alembics, and their different Constructions.

THE Alembic is a vessel usually of glass or tin, which serves for, and is essential in all the operations in the distillery.

There are several sorts of alembics, all different, either with regard to matter or form. As, the common alembic, with a refrigeratory, the earthen and the glass alembic, the *Balneum Mariæ*, and the vapour-bath alembic.

Every one of these being of a different construction, are also used in different operations.

The common alembic consists principally of two parts, the lower part called the body, and the upper termed the head.

The body consists of two pieces, the lower called the cucurbit, and the upper the crown. The cucurbit, or lower part of the body, is a kind of receptacle proportioned to the size of the alembic, in which the bodies to be distilled are placed.

The crown, or upper part of the body, is also another part of the alembic; and is that part of the body to which the head is immediately luted. But an idea of these several alembics will be much better attained from the following figures, which represent them much stronger to the imagination than is possible to be done by words.

C 4

Fig.

Fig. 1. Is a common alembic, a before it is placed in a furnace, w bottom, *b* the crown, *c* the head.

Fig. 2. Is the body without the rim or top of the crown where the

Fig. 3. The head; *a* the rim w be luted to the body; *b* the nose, c is luted into the worm.

Fig. 4. The worm, as it appears the tub, in which it is fixed when end into which the still head is in which conveys the liquor into the

Fig. 5. Two stills at work in o tory; *a, b* the two still heads, *c, d* t closed in the brick-work, *e, e* the tw *f, f* the two ash-holes; *g*, a comm *h*, a spout receiver, called by che rating-glass, used in the distillation order to extract their essential oil drawing the water out of the refri

Fig. 6. A small still with a refrige body, *b* the head, *c* the refrigerato

water, *d* the receiver, luted to the bec of the alembic.

Fig. 7. A glass alembic to be used as a *Bal-neum Mariæ*; *a* the body, *b* the head, *c* the bec, which is to be luted to the receiver, *d* a trivet on which it is standing in the water.

Fig. 8. A proper receiver for the glass alembic, called by chemists a bolt head, or matrass.

Fig. 9. The glass alembic placed in a copper vessel; *a* the copper vessel filled with water, *b* the body of the glass alembic, *c* the head, *d* the receiver luted at *e* to the bec of the alembic.

Fig. 10. A cold still for distilling simple waters; *a* the head, *b* the bec, or nose, *c* the receiver, *d* the plate on which herbs are laid.

Fig. 11. A vessel for digestion, called by chemists a pelican or circulatory vessel; *a* the body, *b* the head, *c, c* two tubes, luted at *d, d* by which the liquor returns from the head into the body; *e* a furnace on which it is placed, *f* the fire-place, *g* the ash-hole.

Fig. 12. Another receiver used necessary to lute it to the end of order to prevent the most volatile being evaporated, and lost.

CHAP. VI.

Of the Accidents that too often happen in forming the Processes of Distillation.

AMONG the accidents which happen in distilling, the least of which may occasion the whole operation to miscarry, and the ingredients to be lost.

And this being a subject of the greatest importance, we shall treat it with all the accuracy.

All accidents are occasioned by one primary cause ; by want of attention, or too much head, and fear often succeed, and become irremediable.

The first accident which may happen, is when a distiller, by too

causes the ingredients to be burnt at the bottom of the still; by this means his liquor is spoiled by an emperumatic taste, and the tin is melted off from the alembic. An emperuma resembles the smell of burnt tobacco, and is produced in liquors by too great a degree of heat. To illustrate this, distil any fruit, flowers, or any aromatic whatever: but especially something whose smell is very volatile, draw off only the best, unlute the alembic, and what remains in the still, will be found to have a very disagreeable smell; whence it follows, that if a little more had been drawn off, it would have spoiled what was before obtained.

If the fire be too violent, the extraordinary ebullition of the contents causes them to ascend into the head: and, if a glass alembic, they fall ignited into the recipient; the heat breaks it, the spirits are dissipated, and often take fire from the heat of the furnace.

If the fire be too strong, the bottom of the still becomes red hot, the materials inflamed, and consequently the fire reaches the recipient.

When an earthen alembic is used, the closest
c 6 attention

attention is requisite to keep the fire
ing the materials at the bottom.
which is always of glass, bursts, and
are spilt, and often catch fire. And
becomes the more difficult, as earth
fire much longer than a common al

If the alembic be not firmly fixe
put out of order, falls down, and un
thus the liquor is spilt, and the vap
spirits on fire.

If all the joints be not carefully
spirits at their first effort issue th
least aperture, run into the fire, w
pagated into the alembic by the va

In distillations where the phleg
first, its humidity penetrates the
loosens it, so that when the spiritu
ascend, they are exposed to the sam

Lastly, when the recipient is un
cially if near full, without the grea
spection the spirits will be spilt, a
fire.

Hitherto I have only given a simple account of what daily happens to distillers ; but the consequences of these accidents are infinitely more terrible than the accidents themselves ; for an artist to lose his time, his labour, and goods, is no small matter : but it follows from what we have premised, that both his life and fortune are in danger from these conflagrations. Instances of the former are too common, as well as those of the latter, relating to the danger to which the operator is exposed. They are evident, and we have seen very lately three instances sufficient to intimidate the most sanguine. The spirits catch, the alembic and recipient fly, and the inflamed vapour becomes present death to all who breathe it.

The rectifiers, who perform the most dangerous operations of distillery, are particularly exposed to these terrible accidents ; the fineness of the spirit, at the same time that it renders it more inflammable, also causes the fire to spread with the greater rapidity. And when their store-houses are once on fire, they are seldom or never saved.

Possibly I may be censured for my conciseness

ness on this head; indeed, the
 it requires the most particular di
 intending to speak of the meth
 prevent these accidents, I shall ch
 ter with recommending the subje
 serious reflection of all concerned
 And it being hitherto omitted,
 others it requires the attention of
 shall further observe, that the
 should never be left to servants.
 expected from ignorant persons? I
 them, when the greatest presence
 requisite.—Let us now proceed to
 of preventing, or at least lessening

CHAP. VII.

Of the Methods of preventing

TO have informed the reader of
 which happen in distilling, would
 little consequence, without shew
 same time, the methods of preve
 In order, therefore, to fortify him
 terror which the foregoing chapt
 excited, we will here point out
 for all the cases before specified.

To prevent accidents, two things especially must be known and adverted to.

1. The knowledge of the fire, which depends on the fuel, whether wood or coal.

2. The manner of luting so as to prevent the vapours from escaping through it, and by that means of setting the whole on fire.

The hardest wood generally makes the quickest fire, such as beech, oak, holme, elm, &c. The white woods, as the ash, the poplar, the willow, and the birch make a milder fire. This holds good also of the coal made of these two kinds of wood; and, consequently, the nature of the wood or coals must determine the fire, and the action of this must be proportioned to the effect intended to be produced by it. That is, the capacity of the alembic, the matters to be distilled, and their quantity. The same may also be said of pit coal, which is generally used in England.

It is evident, that the larger the alembic, the more fire is necessary. What has not been digested, also, requires more fire than that which
has

has been prepared by that operation require a stronger fire than flowtion of simple waters more thanous liquors.

The surest way of ascertaining degree of fire, is to regulate it by as they are more or less disposed spirits, &c. and this is done as operator must not leave the alembic actively listen to what passes within, begins to heat it. When the ebullition too vehement, the fire must be less by taking out some of the fuel, or with ashes or sand.

It requires a long experience in cases, before a distiller can acquire sufficient knowledge in this important part it possible to determine the degree the quantity of fuel; judgment and experience, must supply this defect.

Every thing being determined w the degree of fire, we shall now p plain the method of luting alembi

By the term luting an alembic, we mean the closing the joints through which the spirits might transpire.

Lute is a composition of common ashes, well sifted, and soaked in water; clay, and a kind of paste made of meal or starch are also used for this purpose; which, as I before observed, is to close all the joints, &c. in order to confine the spirits from transpiring.

Good luting is one of the surest methods of preventing accidents. An alembic, where all transpiration is prevented, having nothing to fear but the too great fierceness of the fire; and that may be regulated by the rules already laid down.

The refrigerating alembic is mostly used. The body and the head are joined to each other; but notwithstanding the greatest care be taken in luting the juncture, there will still be some imperceptible interstice for transpiration; and the least being of the greatest consequence, a piece of strong paper should be pasted over the joint, and the alembic never left till the spirits begin to flow into the receiver, in order to apply fresh paper, if the former should contract any moisture.

moisture. The master himself should attend to this, and whatever pipes have been previously used, the eyes should be constantly upon it.

The almbic, when vinous spirit should be luted with clay, care should be taken round the junctures, in order to prevent transpiration; because the consequences are terrible; for when the fire of a great quantity, it is often irremediable. When this earth cracks in drying, it must be moistened, and fresh applied, on the appearance of any occasion for it.

The retort is also luted with clay. When retorts are also used, they are often luted with the same clay, to prevent their melting by the intenseness of the fire.

Lastly, the earthen and glass vessels should be luted with paper and paste as above. Thus explained the great consequences of care and circumspection with regard to luting, and the degree of fire, we shall now proceed to the method of preventing them, and close with a short observation on portable apparatus.

which is, that alembics being never thoroughly secure on this kind of furnaces, a hook should be fastened to the refrigerant for fixing it to the wall.

CHAP. VIII.

Of the remedies for Accidents, when they happen.

NOTWITHSTANDING the best of rules, and the strictest observation, it is impossible entirely to prevent accidents, and, therefore, it is of no less importance to point out the remedies on those occasions.

The most essential are, courage and presence of mind; Fear only increasing the misfortune.

1. If the fire be too violent it must be covered, but not so as totally to prevent its action, as by that means the process of the distillation would be interrupted, and render it more difficult and less perfect.

2. When the ingredients burn, which you will soon discover by the smell, the fire must be immediately put out, in order to prevent the whole charge of the still being entirely spoiled,
which

which would otherwise inevitably
sequence.

3. If the spirits should catch
care is to unlute immediately the
stop both the end of the beak and
receiver with wet cloths.

The fire must then be put out
flame issued through the luting, to
be closed with a wet cloth, which
with water, should never be wanted
house.

4. If the alembic be of earth,
tents burn at the bottom, the fire
ately be put out, the alembic ren-
ter thrown upon it, till the danger
for farther security, covered with

5. If, after all your care in clo-
tures to prevent transpiration, you
thing amiss, while the spirits are
ply clay, or any other compos-
to stop the aperture, and have
cloth ready to stifle the flame,
should take fire.

6. If the heat detaches the lute, or it becomes moist, immediately apply another, having always ready what is necessary for performing it. Should the transpiration be so violent, that you cannot immediately apply a fresh lute, clap a wet cloth round the joint, and keep it on firm and tight, till the spirits have taken their course. But, if notwithstanding all your efforts, the transpiration should increase, so that you fear a conflagration, remove the receiver as soon as possible from the fire, and afterwards your alembic, if portable; but if otherwise, put out the fire immediately.

7. The charge being worked off, be cautious in luting the receiver, that nothing be spilt on the furnace, and carry it to some distance from it, that the spirits exhaling may not take fire.

8. Lastly, observe that wherever a remedy is required, there must be no candle used; for the spirituous vapours easily take fire, and propagate the flame to the vessels from whence they issue.

All that has been hitherto said, concerns only the management of the alembic; but what remains

mains is still more interesting, those who work it, that they may quering the accident, destroy the

On discovering any of the above when the flame has not yet reached let the remedies already mentioned either with regard to the lute, or of the fire.

But if the flame has reached the following precautions are to

The operator must not approach without a wet cloth over his mouth it being immediate death to inhale vapour.

In hastening to stop any accident to approach the side opposite the air impels the flame; for, without caution you would be involved in not, without the utmost difficulty yourself from it.

If, notwithstanding this precaution of the air should force the flame quit the place immediately, and

till its direction be changed, always taking care to have a wet linen cloth before your nose and mouth, and keep yourself on the side opposite to the direction of the flame; and also to have another such cloth, in order to smother the flame, and close the crevice through which the spirits issue.

Should it be your misfortune to be covered with inflamed spirits, wrap yourself in a wet sheet, which should be always ready for that purpose. Self-preservation is of too great importance that any of these precautions should be omitted in such variety of dangers.

If the fire has acquired such a head that it cannot be stopt, the receiver must be broke, and the alembic, if portable, thrown down; but no person must be suffered to go near them, especially those who are strangers to the business.

In a desperate case, like that of a large quantity of rectified spirit taking fire, if time permit, the communication of the beak of the alembic, with the recipient, which is usually a cask, must be cut off, by closely stopping the bung; and
be

be sure no candle come near the n
ing the rest, as the danger would
to expose one's self to the flame
charge, and the distiller's safety s
cipally considered.

I thought it my duty to give m
informations, and hope that in th
distillation, he will find them of
tage.

CHAP. IX.

*On the Necessity of often cooling th
another Means of preventing*

THE refrigerant is so essential
alembic, that for want of it sever
dients are made use of to perform
cooling those whose capacity,
lastly, the construction, will not
having any.

The refrigerant is usually in pro
capacity of the alembic; for whi
ing may serve as a rule, that the c
refrigerant should be to that of t
14 to 8.

The necessity of cooling the head of the alembic, is self-evident to all who have the least knowledge of distillation, as it condenses the spirits, cools them, and causes them to flow into the receiver, which, if of glass, would otherwise be broken by the heat; and consequently serves to prevent conflagrations.

The alembics of the *Balneum Mariæ*, and the vapour bath, ought also to have refrigerants, like the common alembic, unless they are of glass.

Those of earth and glass are cooled, as we have already observed, with a wet cloth, which is also used to cool the head of other kinds of alembics. But it is not difficult to contrive one which may be placed in a refrigerant; such as the following.

To a common small still apply and lute a worm, or long tin, or pewter tube, forming several circumvolutions, of the same circumference with the body; in order to give it some elevation, place this worm in a refrigerant, proportioned to the alembic. If the capacity of this alembic should make it bear too much on the neck of the matrass, it may be supported by

a trevit of the same circumference itself: the extremity of the worm beak projecting beyond the side of rant, for conveying the spirits into

This apparatus will be attended expence, will save the distiller the trouble of continually cooling the head of the worm, and is such a safeguard against accidents, if the worm be well luted, nothing is apprehended but from the violence of

This method of practice, therefore, is attended with three valuable particulars: the first is, that by cooling the spirits it preserves them in the receiver, and obviates the accidents which attend their heat. The second is, that the worm being kept in a moderate heat, the draught is more plentiful, and consequently the spirits are more pure, and the operation have more taste, smell, and fragrance, than they would otherwise

Experience demonstrates, that when the spirits flow hot into the receiver, notwithstanding the distiller may be to lute the head of the alembic, there will be a very considerable evaporation, which, even in simple waters, depreciates the goodness of the liquor.

Lastly, the third is, that the cooling of alembics is what principally contributes to the perfection of the operation; because the coolness of the head precipitates the phlegm, and in the case of too great a degree of fire, and where the ebullition is too vehement, if after taking away part of the fire, or covering it, the ebullition should continue, the head may be cooled with a wet cloth, till the ebullition is reduced.

As there is a necessity of cooling the alembic, so what we have said cannot be too carefully observed. In fine, the contrast of cold and heat, equally concurring, but by methods directly opposite, to the same process, and the perfection of the distillation, is a phænomenon, which deserves the attention of all who study the operations of nature.

CHAP. X.

Of the Necessity of putting Water into the Alembic, for several Distillations.

TWO principal advantages attend putting water into the alembic. The first is, to prevent the loss the distiller would incur without that precaution, and so prevent any alteration in the

liquor procured by distillation. To illustrate by an example. Suppose one should attempt to rectify spirits of wine, without putting water in the alembic, it is certain that the fire will consume part of the spirit, to the entire loss, because the same quantity of spirit cannot be procured from it, as if there had been any thing to moderate the action of the fire, which now preyed

SECONDLY, If liquors are impregnated with strong ingredients, especially such as require a great quantity to be sufficient to absorb all the spirit, a great quantity of spirit must be left over, or the ingredients will burn, and the spirit will contract an empyreumatic taste, which is very detrimental to the spirit, as it is increased

THIRDLY, If no water be put in the alembic, with the ingredients, the spirit will be rendered finer by them, and the fire, if it is too strong, will cause the ingredients to burn, and the spirits to contract an empyreumatic taste, which is very detrimental to the spirit, and is easily prevented by this precaution

Thus, it is a safe-guard against the fire, but besides, water being mixed with

dients, they are at once prevented from burning, and the spirit not weakened; for no sooner are the ingredients put in motion by the fire, than the spirits immediately ascend, and the liquor loses nothing of its quality, provided the receiver be removed as soon as the phlegm begins to ascend.

The water therefore prevents the waste of the spirits, and thus the distiller loses nothing of his goods; whereas, without water, the spirits by impregnating the materials, their quantity must be less. With regard to the phlegm, there is no difficulty in finding when it begins to ascend, the first drop being cloudy, and when it has continued dropping for some time, it is perceived by a milky cast at the bottom of the receiver.

LASTLY, The distiller is no loser with regard to the quality of his liquor, which is not at all weakened thereby. Thus it is attended with the two capital advantages, the profit of the distiller and the perfection of the liquor. Let us now proceed to the different manners of distillation.

CHAP. XI.

*Of the particular Advantages attending
Kind of Distillation.*

IN the third chapter we mentioned the several kinds of distillation; we shall here mention the particular advantages of each, and the circumstances each is to be used.

In order for distillation, the alembic must be charged with materials, and placed over a fire, or substances capable of producing the desired effect.

*The Method of distilling with
Refrigerant Alembic.*

This method of distilling is the most commonly used, being one of the most speedily and profitable, as it requires fewer preparations and less time.

To distil with the common alembic, it must be thoroughly cleansed, and free from the smell of any preceding materials. The materials are then to be put in

bic; but care must be taken that the alembic be not above half full, in order that the materials may have sufficient room to move, without choaking the neck of the alembic. The same care must be taken with regard to the head, it must be thoroughly cleansed and dried; for it often happens that some small quantity of water is left in the rim, which renders the first spirits foul, and, by endeavouring to separate it from the other, some, and that the most volatile part of the spirit, will be lost.

After this, the two parts of the alembic are to be carefully luted with strong brown paper, well pasted on, and the nose of the alembic luted to the worm; after which the fire should be immediately made under the still, lest too long an infusion should prejudice the liquor.

This alembic being worked on an open fire, the operation is quicker than any other; but the degree of fire requires a very close attention; as a different management is necessary to different materials. The water of the refrigeratory must be changed from time to time, and if the case requires it, the whole head, but especially the bec, must be kept cold.

*Of Distillation in Sand, and in what
should be used.*

This species of distillation is in two different manners. First, by fire with sand or ashes, and placing upon it. This method is very necessary, and for the perfect rectification of spirits. Sand is absolutely necessary in the action of the fire, when there is to fear the matter contained in the alembic will burn.

The second method of sand distillation is to take the finest river sand, and after washing it, put into the alembic a sufficient quantity to cover it three fingers deep. The still is to be charged with the matter to be distilled. This serves instead of water in certain cases, where the use of it would destroy the ingredients; as in the fine spirit of wine impregnated with the aromatic parts of the sand preventing the ingredients from burning. It is also necessary in distilling spirits from seeds.

This operation being finished, the alembic must be thoroughly cleansed from

the taste or smell contained therein, be not communicated to any other charge of different ingredients.

Of distilling in Balneum Mariæ, and its Advantages.

This method of distillation is of great use in several cases. Its operation is more perfect, and is subject to few, if any, of those accidents attending distillations on an open fire.

In distilling sweet scented waters from flowers, aromatic plants, and others of that kind, where neither water, nor spirit ought to be mixed with them, there is an absolute necessity for using the *Balneum Mariæ*; as by every other distillation, on an open fire, the ingredients would infallibly burn.

If sand should be made use of, the fire would melt the tin from the alembic, and the contents be in the utmost danger of being burnt.

In distilling in *Balneum Mariæ*, a glass alembic is generally used. This alembic is to be placed in a copper vessel filled with water. This vessel ought at least to be of half the height of the

alembic: at the bottom of the copper be a trivet on which the alembic is placed, that it may not touch the bottom of the furnace, because when the water begins to boil, it perses itself towards the sides, and the bottom dry, the ingredients would be of burning.

The use of the *Balneum Maria* is for those ingredients which require a gentle heat, but if a copper alembic be used, be sure to put sand at the bottom, that the distilled water does not contract any ill taste or smell. It is also adviseable in the rectification of spirits on account of the danger attending distillation, when performed on a naked fire.

Were this method of distillation as tedious as that performed on a naked fire, it ought to be used, because it is subject to fewer accidents, and at the same time the spirit distilled is much more fragrant and pure.

In what cases Glass, or Earthen Alembics are used; their Advantages and Disadvantages.

In the chapter relating to accidents, I have mentioned the earthen alembic;

add, that it ought never to be used, except the matter to be distilled have a strong and bad smell, and then seldom above once, unless it be for ingredients of the same or similar qualities.

This alembic being very difficult to be managed, we can only recommend it in the case above-mentioned.

As a naked fire is generally applied to this alembic, it requires a furnace where the fire may be gradually increased, on account of the accidents to which it is liable.

The glass alembic is more easily managed, as it is generally placed in a *Balneum Mariæ*. Its principal use is for distilling waters from flowers, and making quintessences; and were it not for the length of the operation, it would be preferable to any other method.

This alembic hardly admitting of a refrigerant, a wet linen cloth must be placed on the head, and often changed.

The receiver of this alembic must not be very large, because of the fragility of the bec; but if it were ever so little bent into a curve, the
D 6. largeness

largeness of the receiver would be
dice; because then its whole weight
supported by its stand.

*Advantages of Distillation per se
Vapour Bath.*

This method differs very little from
Balneum Mariæ, and is used nearly in the
same circumstances; but has greatly the advantage
of the *Balneum Mariæ* in the quietness of the
operation. And LEMERY, in the second part of
his course of chemistry, affirms it to be
more perfect.

However that be, its use is equal to
the *Balneum Mariæ*; but in distilling
scented waters, or flowers, sand must be put
at the bottom, that the liquor may not
take a taste from the copper.

*Cases where Dung, Husks of Grapes
are to be used.*

These substances are rarely used in
digestions; and therefore of no use to
distillers, they using only hot asps
well covered for that purpose.

If dung be used, it must be of the hottest kind, viz. that of the horse or sheep, and the quantity proportioned to the heat intended. The lime must be quick; and if the heat required be moderate, lime which has lain some time in the air, must be used. The same is to be observed with regard to the husks of grapes. But in whatever manner these are used, the digestions must be performed in a close covered vessel.

CHAP. XII.

Of Bodies proper for Distillation.

THIS chapter alone might make a volume, were we to make a particular enumeration of all its parts; but, as we have already observed, we shall confine ourselves to the distillation of simple and compound waters.

If we acquit ourselves to the satisfaction of the public, we shall enjoy the pleasure of having treated of one part entirely new; and, indeed, the only one that has been overlooked.

The bodies proper for distillation, are flowers, fruits, seeds, spices, and aromatic plants.

By

By distillation and digestion, v
colour and smell of flowers in s
and essences.

We extract from fruits, at leas
colour, taste, &c.

From aromatic plants, the distil
rits, essences, simple and compou

From spices are procured essenc
language of the chemists, oils and p
also pure spirits.

From seeds, or berries, are draw
ters, pure spirits.; and from some
annise, fennel, and juniper, oil.

The colour of flowers is extracted
and likewise by digestion in brand
wine: the smell is extracted by dis
simple water with brandy, or spirit

What is extracted of the colour
by infusion in water by a gentle he
gestion in brandy, or spirits of wine
the distiller's phrase, tincture of flo

The colour of fruits is extracted in the same manner, either by infusion or digestion: their taste is also procured by the same processes. But let it be observed, that the time of these operations must be limited; for otherwise the fruit, after fermentation, would render it acid. The taste is also extracted by distillation in spirit of wine.

From aromatic plants, are extracted by the alembic, pure spirits, odours, and simple waters. But these require different methods of distillation. The first by water, or brandy only, the second by rectified spirit, which will give them the greatest excellency they are capable of.

The plants themselves with their flowers may also be distilled, which is still better.

From spices are drawn spirits, and oily, or spirituous quintessences. The spirits are drawn by brandy, or spirit of wine, with very little water: the oils are distilled *per descensum*; and the spirituous quintessences by pounding the spices, and after infusing them in spirit of wine, decanting it gently by inclination.

From

From seeds are extracted simple spirits, and oils; very few of the first being what is generally extracted from seeds and berries.

Some distillers, through a notion to distil seeds with water; but their method is to be compared with those which are used with spirits. When oils are drawn the operation is performed either in the *neum Mariæ*, or the vapour-bath.

We only deliver in this place, the elements of each of these operations, to be further illustrated in the sequel. We treat more particularly of these subjects in the next chapter.

CHAP. XIII.

Of what is procured by Distillation.

BY Distillation are procured simple waters, and phlegm.

Spirits are very difficult to be distilled. We consider them as the most subtle and volatile part of a body.

All bodies without exception are capable of being distilled more or less.

These parts are an ignited substance, and consequently by their own nature disposed to a violent motion.

These volatile particles are more or less disposed to separate themselves, as the bodies are more or less porous, or abound with a greater or lesser quantity of oil.

By the term essence, we understand the oleaginous parts of a body. An essential oil is found in all bodies, being one of their constituent principles. I have observed in all my distillations, spirit of wine excepted, a soft unctuous substance floating on the phlegm; and this substance is oil, which we call essence; and this is what we endeavour to extract.

Simple waters are those distilled from plants, flowers, &c. without the help of water, brandy, or spirit of wine. These waters are commonly odoriferous, containing the odour of the body from whence it is extracted, and even exceeds in smell the body itself.

Phlegm is the aqueous particles of bodies; but whether an active or passive principle, we shall leave to the decision of chemists.

It

It is of the last importance to a d
well acquainted with its nature ; m
ing for phlegm several white and cl
which first fall into the receiver, y
begins to work. These, however, a
most spirituous particles of the m
alembic, and consequently ought
ved. What has given occasion
take, is some humidity remaining
&c. of the alembic. And had it bee
ly wiped, the first drops would have
ly bright with any during the whole

The following remark deserves a
bodies that have been digested, th
cend first: whereas in charges n
the phlegm ascends before the s
reason of this is very plain and nat

In substances previously digested
of the fire no sooner causes the m
alembic to boil, than the spirits, bei
volatile parts; detach themselves, and
the head of the alembic. But whe
to be distilled has not undergone a p
tion, the spirits being entangled in
are less disposed to ascend, till the p
separates, and gives them room to fl

The phlegm being aqueous rises first: this is more particularly observable in spices. I am, however, inclined to believe, that were the operation performed in an alembic, whose head was at a greater distance from the surface of the charge, they would not ascend high enough to come over the helm, but fall back again by their own gravity, and by that means leave the spirits at liberty to ascend. But in the common refrigeratory alembic this always happens.

If this observation be not readily admitted, I appeal to experience, which I desire may be the test of every thing I shall advance.

Another observation, which has verified the above assertion by innumerable instances, is, that in an extraordinary run of business, when I had not time sufficient to digest the substances, I used to bruise them in a mortar; but notwithstanding the trituration, the phlegm first came over, and afterwards the spirits. But I desire to be understood, that I speak here only of the volatile parts of the plants not drawn with violent spirits, but contained in a simple water.

Another remark I must add, and which I hope will be acceptable to the curious, as it has not yet

yet been made public, though observation has often occurred to others that in mixed charges, consisting of fruits, and aromatic plants, put in without a previous digestion, the flowers ascend first; and notwithstanding the mixture, they contracted nothing of the taste of the fruits and plants. In the spirits of the flowers, those of the plants are not in the least impregnated with the taste of either of the flowers or plants. In the last place, the spirits of the plants are less neat than the former. Should this be strange to any one, experience will convince him of the truth.

Another observation I have made of aromatic herbs, is, that whether they are digested; whether the spirits or phlegm ascend first; the spirits contain very little of the taste and smell of the plants from whence they are extracted; and I have always been obliged to put to these spirits a greater or less quantity of the phlegm, in order to give them the taste they had drawn, the taste of an aromatic plant; the phlegm containing the greater quantity of both.

This observation I insert as of great use to those who practice distillation.

As the term digestion often occurs in this essay, I cannot avoid pointing out its advantages, and even shew the necessity of using it in several circumstances.

Substances are said to be in digestion, when they are infused in a menstruum, over a very slow fire. This preparation is often necessary in distillation; for it tends to open the bodies, and thereby free the spirits from their confinements, whereby they are better enabled to ascend.

Cold digestions are the best; those made by fire, or in hot materials, diminish the quality of the goods, as some part, as the most volatile, will be lost.

In order to procure essences, the bodies must be prepared by digestion. It is even of absolute necessity for extracting the spirits and essences of spices.

CHAP. XIV.

Of the proper Season for

FLOWERS of all kinds must be gathered in their proper seasons. To begin with the first, Its colour and smell can only be perfect when it is in its greatest vigour, which is at its first appearance, nor when it is in its full perfection; the season being near the end of *April* is the month in which it is in its perfection; the season being near the end of *March*, as to give the violet its fragrance.

The same must be observed of all other flowers. And let them be gathered at the best time of the day; the odour and fragrance of the flowers being then in their greatest perfection.

The same observation holds of all other goods; regard to fruits; to which must be added that they are the finest, and of the best quality, and colour, especially those from which the goods are drawn: they must be free from all blemishes, as the goods would by that means be injured.

Berries and aromatics may be distilled at any season, all that is necessary being a good choice. But in this distillers are sometimes mistaken, as may easily happen without a very accurate knowledge. We shall therefore, in the sequel, lay down more particular directions for making a proper choice of materials.

CHAP. XV.

Of the Filtration of Liquors.

FILTRATION consists in passing liquors through some porous substance, in order to free them from those particles which obscure their brightness.

Nothing is finer than a liquor newly distilled; but the syrup and colouring particles render it thick and opaque; in order, therefore, to restore their brightness, they are filtrated, which is done by passing them through sand, paper, cloth, &c.

All the attention of the distiller cannot, in ordinary operations, always prevent some aqueous particles from rising with the spirits, either
in

in the beginning of the process positions where they ascend first conclusion when they rise last. A unavoidable, so it it also sometin

In distilling flowers, or aroma gathered, the phlegm rises first cannot be taken out of the recei priving the spirits of a considera fragrancý.

In distilling spices, their odo entangled, will remain in the a of the phlegm is drawn off. Bu of these substances, their quintes the necessity ceases. But the ph ly causing a cloudiness in the li rendered tolerably fine, by pour by inclination, without the troub the aqueous particles, by their gr the bottom. But to render it ent fine, put some cotton in a funne liquor through it, by which mea particles will be retained in the must however remember to cover funnel, to prevent the most vola spirits from evaporating.

CHAP. XVI.

Of the Distillation of Malt Spirits.

THE wash, or liquor, being prepared by brewing and fermentation, as directed in the first and second chapters of this treatise, the still is to be charged with it, and worked off with a pretty brisk fire. But it should be observed, that the only apparatus used in this process, is the alembic with a refrigeratory, as represented in *Fig. 1.*

The wash being of a mucilaginous nature, a particular management is necessary to prevent its burning, and cause it to work kindly in the still: if it should happen to be burnt in the operation, the spirit will have a most disagreeable flavour, which can hardly ever be removed; and therefore to prevent this ill effect, the wash should be made dilute or thin, the fire well regulated, and the whole kept in a continual agitation during the whole process. The most judicious distillers always take care to have their wash sufficiently diluted, and constantly find their spirit the purer for it. With regard to the fire, it may be easily kept regular, by a constant attendance, and observing never to stir it

E

hastily,

hastily, or throw on fresh fuel; and of the liquor in the still is to be stirred by means of a paddle, or bar kept stirring till it just begins to boil, which is attended on the head; and after which is a great danger, but from the improvement of the fire: this is the common method, it is no easy matter to hit the exact time, doing it either too late, or too soon, attended with great inconvenience, so that several have discovered other methods; some put solid bodies into the still with the wash; others put some proper matter at the bottom of the still, which are the places where the fire acts with the greatest force.

The use of the paddle would, however, answer better than either of these methods, if it be continued during the whole time the still is working; and this may be done by the following method: let a short tube of copper be soldered in the centre of the still, let a close bar be placed below in the still, with a hole in the middle, corresponding to the hole at the top; through both these, let a rod be carried down in the still, and let the rod be passed through this with wooden washers at each end; this rod may be continually

winch at the still-head, and the sweeps will continually keep the bottom and sides scraped clean, the interstices of the tube being all the time well crammed with tow, to prevent any evaporation of the spirit.

The same effect may, in a great measure, be produced by a less laborious method, namely, by placing a parcel of cylindriæal sticks lengthways, so as to cover the whole bottom of the still, or by throwing in a loose parcel of faggot sticks at a venture ; for the action of the fire below moving the liquor, at the same time gives motion to the sticks, making them act continually like a parcel of stirrers upon the bottom and sides of the still, which might, if necessary, be furnished with buttons and loops, to prevent them from starting. Some also use a parcel of fine hay laid upon the loose sticks, and secured down by two cross poles, laid from side to side, and in the same manner fastened down with loops. Care is to be taken in this case, not to press the hay against the sides of the still ; for that would scorch nearly as soon as the wash itself ; but the sticks never will : these are simple but effectual contrivances, and in point of elegance, they may be improved at pleasure.

There is another inconvenience in the distilling of malt spirit, which is the settling of bottoms, or gross mealy fæculent, that runs down the still along with the liquor, the quantity of the wash going off in form of a thick mealy mass grows by degrees more and more stiff, so as to scorch towards the bottom of the operation. The best method of avoiding this, is to have a pipe with a stop-cock, that runs from the upper part of the worm-head to the bottom of the still; so that upon a half, or a quarter of an hour, may continually supply a little stream of water, in the same proportion as the wash goes off, by which means the danger of scorching is avoided, and the operation, at the same time, is not in the least retarded.

In *Holland*, the malt distillers wash the wash thick, with the whole body of the spirit; yet they are so careful in keeping their stills clean, and so regular and nice in the management of their fires, that though the wash is so thick, it does not scorch at all on this head, only to char the bottom while it is hot and moist, they very seldom suffer the misfortune to scorch, except near the depth of winter. When scorching has once happened in a still,

tremely careful to scrape, scrub, and scour off the remains of the burnt matter, otherwise they find the same accident very liable to happen again in the same place. But beyond all the other methods in use on this occasion, would be the working the stills not by a dry heat, but in a *Batneum Mariæ*, which might possibly be so contrived by the bason being large, and capable of working a great many stills at once, as to be extremely worth the proprietor's while in all respects.

Another requisite to be observed is, that the water in the worm-tub be kept cool; this may be effected, by placing in the middle of the tub a wooden pipe or gutter, about three inches square within, reaching from the top almost to the bottom; by this contrivance cold water may, as often as necessary, be conveyed to the bottom of the worm-tub, and the hot water at the top forced either over the sides of the tub, or, which is better, through a leaden pipe of moderate size, called a waste-pipe, soldered into the top of the tub, and extended to the gutter formed to carry away the water.

CHAP. XVII.

Of the Distillation of Molasses.

THE spirit distilled from molasses is very clean or pure. It is made by common treacle dissolved in water, and distilled in the same manner as the wash of common malt spirit.

But if some particular art is used in rectifying this spirit, it will not prove a common malt spirit, but more flat and less acid, though otherwise much cleaner. Its essential oil is of a less office. Therefore, if good fresh wine lees, or tartar, be added and duly fermented with the molasses, the spirit will acquire a greater vinosity and briskness, and be much nearer to the nature of foreign spirits.

Where the molasses-spirit is brought to common proof strength, if it be found to have a sufficient vinosity, it will be unnecessary to add some good dulcified spirit of wine. If the spirit be clean worked, it may

tion only, be made to pass on ordinary judges for *French* brandy.

Great quantities of this spirit are used in adulterating foreign brandy, rum, and arrac. Much of it is also used alone, in making cherry-brandy, and other drams by infusion; in all which many, and perhaps with justice, prefer it to foreign brandies.

Molasses, like other spirits, is entirely colourless, when first extracted; but distillers always give it, as nearly as possible, the colour of foreign spirits; the methods of performing which, we shall explain in a subsequent chapter.

CHAP. XVIII.

Of the Nature of Brandies, and Method of distilling them in France.

THE general method of distilling brandies in *France* need not be formally described, as it differs in nothing from that commonly practised here in working from wash or molasses; nor are they in the least more cleanly, or exact in the operation.

They only observe more to throw a little of the natural ice along with the wine, as finding spirit the flavour, for which it is admired abroad.

But though brandy is extracted by experience tells us, that there is a difference in grapes from which the wine is made. Every soil, every climate, every kind of grapes varies with regard to the quantity of spirits extracted from them. There are grapes which are only fit for eating, and for drying; as those of *Damascus*, *Provence*, and *Avignon*; but not fit to

Some wines very proper for distillation, much less so. The wines of *Provence* afford a great deal of brandy by distillation, when the operation is carried to full strength: the *Orleans* wines, and *Blois* afford yet more; but the wines of the territories of *Cogniac* and *Brandy* which are, however, in the number of the least drunk in *France*. Whereas *Brandy* and of *Champaign*, though of fine flavour, are improper, because they contain but very little in distillation.

It must also be farther observed, that all the wines for distillation, as those of *Spain*, the *Canaries*, of *Alicant*, of *Cyprus*, of *St. Peres*, of *Toquet*, of *Grave*, of *Hungary*, and others of the same kind, yield very little brandy by distillation; and consequently would cost the distiller considerably more than he could sell it for. What is drawn from them is indeed very good, always retaining the saccharine quality, and rich flavour of the wine from whence it is drawn; but as it grows old, this flavour often grows aromatic, and is not agreeable to all palates.

Hence we see, that brandies always differ, according as they are extracted from different species of grapes. Nor would there be so great a similarity as there is between the different kinds of *French* brandies, were the strongest wines used for this purpose: But this is rarely the case, the weakest and lowest flavoured wines only are distilled for their spirit, or such as prove absolutely unfit for any other use.

A large quantity of brandies is distilled in *France*, during the time of the vintage: for all those poor grapes that prove unfit for wine, are usually first gathered, pressed, their juice fer-

mented, and directly distilled. The hands of their poor wines at once their casks empty for the reception. It is a general rule with them not to wine that will fetch any price as in this state, the profits upon them are greater than when reduced to brandies. A stock of small wines, with which they are most overrun in *France*, sufficient for their making such vast quantities. In *France*, more than other countries lie in warmer climates, and are adapted to the production of grapes.

Nor is this the only fund of the for all the wine that turns eagerly demned to the still; and, in short, can neither export, nor consume at amounts to a large quantity; since wine, laid in for their family provision as not to keep during the time in

Hence, many of our *English* proper management, are converted into brandies, that shall hardly be distinguished from foreign, in many respects, provided the process be neatly performed. And, in particular, for a cyder spirit, and a crab spirit

from the first extraction, be made to resemble the fine and thin brandies of *France*, we would recommend to those distillers, whose skill and curiosity prompts them to undertakings condemned by those who only work mechanically, and scorn to deviate from the beaten tract, though they have the fairest prospect of acquiring profit to themselves, and a lasting emolument to their country.

CHAP. XIX.

Of the Distillation of Rum.

RUM differs from what we simply call sugar spirit, as it contains more of the natural flavour, or essential oil, of the sugar cane: a great deal of raw juice, and even parts of the cane itself being often fermented in the liquor, or solution, of which the rum is prepared.

Hence we see from whence rum derives its flavour; namely, from the cane itself. Some, indeed, are of opinion, that the unctuous or oily flavour of the rum proceeds from the large quantity of fat used in boiling the sugar. This fat, indeed, if coarse, will give a stinking flavour to the spirit in our distillations of the sugar

liquor, or wash, from our refining sugar, but this is nothing like the flavour which, as we have already observed, is of the natural flavour of the cane.

Great quantities of rum are made in *Barbadoes*, *Antigua*, and other islands. The method of making it is this:

When a sufficient stock of the molasses is gathered together, they add water to them, and mix them in the common method, though the fermentation is always carried on very long at first; because at the beginning of the process for making rum in the islands, they use yeast or some other ferment to make it ferment. After this, they, by degrees, procure more quantity of the ferment, which they add head to the liquor in the operation. By this they are able afterwards to ferment their rum with a great deal of expence, even in very large quantities.

When the wash is fully fermented to a certain degree of acidity, the distillation is performed in the common way, and the spirit is brought to proof; though sometimes it is re-

much greater degree of strength, nearly approaching to that of alcohol, or spirit of wine; and it is then called double distilled rum.

It would be easy to rectify the spirit, and bring it to a much greater degree of purity than we usually find it to be of; for it brings over in the distillation a large quantity of the oil; and this is often so disagreeable, that the rum must be suffered to lie by a long time to mellow before it can be used: whereas, if well rectified, its flavour would be much less, and consequently much more agreeable to the palate.

The best state to keep rum, both for exportation, and other uses, is doubtless that of alcohol, or rectified spirits. In this manner, it would be contained in half the bulk it usually is, and might be let down to the common proof strength with water when necessary: for the common use of making punch, it would likewise serve much better in the state of alcohol; as the taste would be cleaner, and the strength might always be regulated to a much greater degree of exactness than in the ordinary way.

If the business of rectifying rum was more
nicely

nicely managed, it seems a very scheme to throw out so much of reduce it to the fine light state of but lightly impregnated with the state it would nearly resemble arrac proved by mixing a very small quantity with a tasteless spirit; for it then bears a near resemblance to arrac in flavour.

CHAP. XX.

Of Sugar-Spirit.

WE mean by a sugar-spirit, that which is drawn from the washings, scummings, &c. of a sugar-baker's refining-house.

These recrementitious, or drossy parts of sugar, are to be diluted with water, and then distilled in the same manner as molasses or rum; if the operation be carefully performed, and the spirit well rectified, it may be mixed with the best foreign brandies, and even arrac in any proportion, to great advantage; for it will be found superior to that extracted from the cane, and consequently more proper for medicinal uses.

C H A P. XXI.

Of Raisin-Spirits.

BY raisin-spirits, we understand that extracted from raisins, after a proper fermentation.

In order to extract this spirit, the raisins must be infused in a proper quantity of water, and fermented in the manner described in the chapter on fermentation. When the fermentation is completed, the whole is to be thrown into the still, and the spirit extracted by a strong fire.

The reason why we here direct a strong fire, is, because by that means a greater quantity of the essential oil will come over the helm with the spirit, which will render it much fitter for the distiller's purpose; for this spirit is generally used to mix with common malt goods: and it is surprising how far it will go in this respect, ten gallons of it being often sufficient to give a determining flavour, and agreeable vinosity to a whole piece of malt spirits.

It is therefore well worth the distiller's while to endeavour at improving the common method of extracting spirits from raisins; and perhaps the following hint may merit attention:

When

When the fermentation is complete, the still charged with fermented liquor, before directed, let the whole be drawn over as brisk a fire as possible; but instead of a cask or can, generally used by distillers for a receiver, let a large receiver, by chemists, a separating-glass, be applied to the nose of the worm, and a condenser applied to the spout of the separator; by this means the essential oil will rise to the top of the spirit, or rather low in the separating-glass, and may be easily separated at the end of the operation.

The use of this limpid essential oil is well known to distillers; for in this resides the true flavour, and consequently may be of the greatest advantage in giving that delicate taste, and true vinosity, to the compound spirits.

After the oil is separated from the liquor, the liquor may be rectified in *Balns* into a pure and almost tasteless spirit, before well adapted to make the finest cordials, or to imitate, or mix with *French brandies, arracs, &c.*

In the same manner a spirit may be obtained from cyder. But as its particular flavour is not so desirable as that obtained from raisins, it should be distilled in a more gentle manner, and carefully rectified in the manner we shall shew in the chapter on rectification ; by which means a very pure, and almost insipid spirit will be obtained, which may be used to very great advantage in imitating the best brandies of *France*, or in making the finest compound waters or cordials.

CHAP. XXII.

Of Arracs.

WHAT is properly meant by the term arracs, are spirits extracted from the fermented juice of certain trees common in the *East Indies*, particularly those of the cocoa, palm-tree. The whole process of making arrac, is performed in the following manner :

In order to procure the vegetable juice for this operation, the person provides himself with a sufficient number of small earthen pots, with bellies and necks, resembling our common glass bottles; a number of these he fastens to his girdle, or to a belt across his shoulders, and climbs up the tall trunk of the cocoa-tree; having reached

reached the boughs of the tree, he takes a knife certain small buds, or butts, and immediately to the wound one of these he fastens it with a string to the bough, after which he proceeds, till he has fixed a number of bottles, which serve as receivers for the juice distilling from the wounds. This operation is generally performed in the evening, as the quantity of juice flowing from the wounds is more at night than in the day. The bottles are afterwards being taken off, and the liquor emptied into a proper vessel, where it spontaneously ferments, as soon as the fermentation is complete, the liquor is thrown into the still, and drawn off as low wine; but so very poor and dilute, that we are obliged to rectify it in another still, with a weak kind of proof spirit, we get a liquor, for though it appears bubble-proof, it contains more than a sixth, and some say more than an eighth of alcohol. All the rest is water, than an acidulated water, which is commonly supplied from any common spring. This liquor appears bubble-proof, when in reality it is not, what we mean by proof, is not so, as at first sight it appears. This kind of proof is entirely owing to the volatility of the parts of the liquor, or to the emulsive property of the oil incorporated.

we shall abundantly shew in a subsequent chapter.

From this account of arrac, it should seem no very difficult matter to imitate it here. And, perhaps, the whole difficulty lies in procuring a pure and insipid spirit; for it is ridiculous to attempt it with our common malt spirit. With regard to the flavour of the arrac, it may be effectually imitated by some essential oils easily procurable.

Hence we see of what prodigious advantage a pure and insipid spirit would be of to distillers, and consequently the great encouragement there is to attempt the discovery. Perhaps a spirit of this kind may be extracted from sugar properly refined. The hint is worth prosecuting, and the writer of this essay, from repeated experiments, is abundantly convinced that the thing is practicable. Had he entirely succeeded, he would readily have communicated the whole for the benefit of his country; but is now obliged to defer, to some future opportunity, the result of his enquiries. In the mean time, he would recommend the prosecution of this hint to those distillers who endeavour to improve their art, and to advance it nearer to perfection.

Since arrac is a spirit extracted from the juice
of

of the cocoa-tree, it may perhaps requiring how nearly it may be uniting and distilling the juices of sycamore trees. We should by obtain an *English* arrac; and, per equal in flavour to that imported

When the cask, in which the aged, happens to be decayed, or the any nails, or other iron, it dissolves and at the same time extracts the of the oak, by which means the white the cask acquires an inky colour. To whiten and clarify arrac, which has this colour, a large quantity of new milk must be put into the cask, and beat together, as vintners do to brown wines; by this means the colour will be absorbed by the milk, and the bottom, so that the greatest part of the arrac may be drawn off fine, and procured in the same condition as if it had been rectified through a conical flannel.

CHAP. XXIII

Of Rectification.

THERE are several methods of performing this operation; though some, and

in general practised by our distillers, hardly deserve the name; because, instead of rectifying, that is, freeing the spirit from its essential oil and phlegm, they alter the natural flavour of the spirit that comes over in the operation.

The principal business of rectification is to separate the spirit from the essential oil of the ingredient, which is very apt to adhere strongly to the spirit. And in order to this, care should be taken in the first distillation: that is, the spirit, especially that from malt, should be drawn by a gentle fire, by which means great part of the essential oil will be kept from mixing with the spirit; for experience has abundantly proved, that it is much easier to keep asunder, than to separate them when once mixed.

But as it is almost impossible to draw low wines without the spirit being in some measure impregnated with the essential oil, it is absolutely necessary to be acquainted with some methods of separating the spirit from the oil, and also of freeing it from its phlegm. The best methods of doing this to perfection, are re-distillation and percolation.

In order to rectify low wines, they should be
put

put into a tall body, or alembic, and distilled in *Balneum Mariæ*; by this proportion, both of the oil and spirit remain in the body. But if the spirit be found, after this operation, to contain the essential oil, it must be let down in water, and re-distilled in the same manner. And thus it may be brought to any degree of purity; especially if in the operation the spirit be suffered to fall into a proper *Balneum Mariæ*. But it must be remembered that it is much more difficult to clear proof-spirit, than low wines, because it is more intimately mixed with the oil than with the latter. This oil may be separated from proof-spirit, &c. by the method already proposed, especially if it be filtered through paper, thick flint, or stone, &c.

But this method, though it effects the answer to the intention, is generally rejected by distillers, because of the slowness of the operation; and others substituted in its stead. Instead of freeing the spirit from the oil, they only abolish the natural flavour of the spirit, and make a more intimate mixture between the particles of the spirit, and those of the essential oil.

It is impossible to enumerate all the methods practised by distillers, as almost every one pretends to have a secret nostrum for this purpose. The principal methods in use for rectifying malt spirits, are, however, reducible to three, namely, by fixed alkaline salts, by acid spirits mixed with alkaline salts, and by saline bodies, and flavouring additions.

The method of rectifying by alkaline salts is thus performed : To every piece of proof-spirit, add fourteen pounds of dry salt of tartar, fixed nitre, or calcined tartar ; lute on the head, and distil by a gentle heat, but be very careful to leave out the faints. By this method a large proportion of the foetid oil will be left in the still : and what comes over with the spirit will be greatly attenuated. But this operation is generally performed in a very different manner ; for, instead of distilling the spirit in a gentle and equable manner, the still is worked in its full force ; by which means the oil, which should have remained in the still, is driven over, and intimately mixed with the spirit ; and consequently, the whole operation frustrated, and the spirit rendered much harder to cleanse than it was before.

But

But even when the operation is according to the rules of art, it is imperfect; for it is well known, that fixed salts become volatile in the retort over the helm, and intimately mix with the essential oil still contained in it. This means the oil becomes more united with the spirits, and consequently harder to be separated by repeated distillations. Nor is this all, for the still being in full force, the bitter oil of the matter, as a kind of liquid soap in the still, the alkaline salt, is brought over with the faints, and suffered to mix with the spirit, whereby it is rendered almost as ill-tasted as before the operation. If this operation were performed to perfection, it would never answer its end, for the alkaline salt destroys the spirit, and consequently deprives it of its most valuable properties. On being well acquainted with this defect in the operation, and endeavour to supply it by acids. This is what we call the separation by alkalies and acids.

The operation of rectifying by fixed alkalies and acids, is the same

described; the spirit is drawn over from fixed alkalies as before; but in order to mortify the alkali in the spirit, and restore its vinosity, a proper quantity of some acid spirit is added. Various kinds of acids are used on this occasion; but principally those of the mineral kind, because of their cheapness; as oil of vitriol, spirit of nitre, oil of sulphur, and the like. We would, however, caution a young distiller from being too busy with these corrosive acids; the sulphureous spirit of vitriol, dulcified spirit of nitre, or Mr. Boyle's acid spirit of wine well rectified, will much better answer his purpose.

The third method of rectification is that by saline bodies, and flavouring ingredients. There is no difference in the operation between this and the two foregoing methods; fixed alkaline salts, common salt decrepitated or dried, calcined vitriol, sandiver, alum, &c. is put into the still with the low wines, and the spirit drawn over as before. When the quantity is drawn off the flavouring ingredients are added to give the spirit the flavour intended. But as the spirit is not by this means rendered sufficiently pure, the disagreeable flavour of the spirit generally overpowers that of the ingredients, whereby the whole intention is either destroyed, or a com-

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pound

pound flavour produced, very different from that intended.

Some distillers, instead of alkaline salts, use quick lime in rectifying their malt spirit. This ingredient cleanses and dephlegmatises the spirit considerably; but like that rectified with tartar line salts, it requires an alkaline salt, and also a nidorous flavour. Acid spirits are as necessary to be mixed with malt spirit rectified with quick lime, as with that rectified with an alkaline salt. If chalk, or well purified animal bones, &c. were used instead of quick lime, the spirit would be much less alkaline or nidorous flavour; consequently, the flavouring ingredients might be added to it with more success than is expected from a spirit rectified with alkali.

But, perhaps, if neutral salts were used instead of the alkaline ones, the spirit might be rendered pure, without contracting any flavour; soluble tartar might be used for this purpose, though the spirit acquires a little saponaceous flavour. Dr. Cullen mentioned another method for this purpose, to deprive the volatile salts of their volatility by rendering them neutral with spirit of tartar.

afterwards subliming them with salt of tartar; the acid may be varied, if the spirit of salt should not be found so well adapted to the purpose as could be wished: but fine dry sugar seems the best adapted to the purpose of rectifying these spirits; as it readily unites with the essential oil, detains and fixes it, without imparting any urinous, alkaline, or other nauseous flavour to the spirits rectified upon it.

Thus have I considered the principle methods used by our distillers, in rectifying their spirits; and shall conclude this chapter with remarking, that there is no other way of rectifying to perfection, besides what we first laid down, namely, by gentle distillation. But then it must be remembered, that the whole process must be of a piece: we mean, that the first distillation from the wash must be performed in a gentle manner; for otherwise the essential oil will be so intimately blended with the spirit, as not to be easily separated by re-distillation. Another good property attending this method is its universality; all kinds of spirits, from whatever ingredients extracted, require rectification; and this is adapted to all kinds.

CHAP. XXIV.

Of the Flavouring of Spirits.

We have observed in the preceeding that the common method of rectifying from alkaline salts, destroys their vinosity in its stead introduces an urinous taste. But as it is absolutely necessary to store, or at least to substitute in its place, a certain degree of vinosity, several methods have been proposed, and a multitude of experiments formed, in order to discover this *gratum*: but none has succeeded except with spirit of nitre; and accordingly either strong or dulcified, has been used by most distillers, to give an agreeable flavour to their spirits.

Several difficulties, however, attend the method of using it; the principle of it being apt to quit the liquor in a short time, and consequently depriving the liquor of the vinosity it was intended to give. To remove this difficulty, and prevent it from quitting the goods, the dulcified spirit of nitre, which is much better than

spirit, should be prepared by a previous digestion continued for some time with alcohol; the longer the digestion is continued the more intimately will they be blended, and the compound rendered the milder and softer.

After a proper digestion, the dulcified spirit should be mixed with the brandy, by which means the vinosity will be intimately blended with the goods, and disposed not to fly off for a very considerable time.

No general rule can be given for the quantity of this mineral acid requisite to be employed, because different proportions of it are necessary in different spirits. It should, however, be carefully adverted to, that though a small quantity of it will undoubtedly give an agreeable vinosity resembling that naturally found in the same subtile spirits drawn from wines, yet an over large dose of it will not only cause a disagreeable flavour; but also render the whole design abortive, by discovering the imposition. Those, therefore, who endeavour to cover a foul taste in goods by large doses of dulcified spirit of nitre, will find themselves deceived.

But the best, and indeed the only method of.

imitating *French* brandies to perfect essential oil of wine; this being that gives the *French* brandies the must, however, be remembered, that use even this ingredient to advance tasteless spirit must be first procured. It is ridiculous to expect that this essential oil be able to give the agreeable flavour to our brandies, to our fulsome malt spirit loaded with its own nauseous oil, or impregnated with a lixivious taste from the salts used in rectification. How a spirit may be obtained has been considered in some of the preceding chapters; therefore remains to shew the method of procuring this essential oil of wine, which

Take some cakes of dry wine lees used by our hatters, dissolve them in three times their weight of water, distil with a slow fire, and separate the receiver from the separating glass: reserving for the first that only which comes over first, the second oil being coarser and more resinous.

Having procured this fine oil of wine, it may be mixed into a quintessence with pure spirit, by which means it may be preserved

fully possessed of all its flavour and virtues; but without such management, it will soon grow resinous and rancid.

When a fine essential oil of wine is thus procured, and also a pure and insipid spirit, *French* brandies may be imitated to perfection with regard to the flavour. It must, however, be remembered, and carefully adverted to, that the essential oil be drawn from the same sort of lees, as the brandy to be imitated was procured from; we mean, in order to imitate *Coniac* brandy, it will be necessary to distil the essential oil from *Coniac* lees; and the same for any other kind of brandy. For as different brandies have different flavours; and as these flavours are owing entirely to the essential oil of the grape, it would be preposterous to endeavour to imitate the flavour of *Coniac* brandy, with an essential oil procured from the lees of *Bordeaux* wine.

When the flavour of the brandy is well imitated by a proper dose of the essential oil, and the whole reduced into one simple and homogeneous fluid, other difficulties are still behind: the flavour, though the essential part, is not however the only one; the colour, the proof, and the softness must be also regarded, before a

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spirit,

spirit, that perfectly resembles brandy
procured. With regard to the proof
easily hit, by using a spirit rectified
which, after being intimately mixed
essential oil of wine, may be let d
per standard by fair water. And
may in a great measure be obtained
and rectifying the spirit with a ge
what is wanting of this criterion
when first made, will be supplied b
must be remembered, that it is tim
gives this property to *French* br
being at first like our spirits, acrid
fiery. But with regard to the co
cular method is necessary to imit
fection: and how this may be d
considered in the next chapter.

CHAP. XXV.

Of the Methods of colouring

THE art of colouring spirits o
observations on foreign brandies.
French brandy that has acquired
degree of softness and ripeness, i
the same time, to have acquired
brown colour; and hence our d
endeavoured to imitate this colour

rits as are intended to pass for *French* brandy. And in order to this, a great variety of experiments has been made on various substances, in order to discover a direct and sure method of imitating this colour to perfection. But, in order to do this, it is necessary to know from whence the *French* brandies themselves acquire their colour; for till we have made this discovery, it will be in vain to attempt an imitation; because, if we should be able to imitate exactly the colour, which is indeed no difficult task, the spirit will not stand the test of different experiments, unless the colour in both be produced from the same ingredient.

This being undeniably the case, let us try if we cannot discover this mighty secret; the ingredient from whence the *French* brandy acquires its colour.

We have already observed, that this colour is only found in such brandies as have acquired a mellow ripeness by age; it is therefore not given it by the distiller, but has gained it by laying long in the cask. Consequently, the ingredient from whence this colour is extracted, is no other than the wood of the cask, and the brandy in reality is become a dilute tincture of oak.

The common experiment used to prove the
 P. 5 genuine.

genuineness of *French* brandy proved by experiment is well founded. The experiment is, that if they pour into a glass of brandy a few drops of a solution of calcined vitriol of iron in spirit of sulphur, or any other mineral acid, the whole turns of a blue colour; in the same manner as we make ink of a tincture of gall.

Since, therefore, the colour of *French* brandy is acquired from the oak of the case, it is not difficult to imitate it to perfection. A small quantity of the extract of oak, or the shavings of wood properly digested, will furnish a tincture capable of giving the spirit the colour required. But it must be observed, that as the tincture is extracted from the wood by brandy, that is alcohol and water, it is necessary to use both in extracting the tincture; for each of these menstrua dissolves a part of the wood. Let, therefore, a sufficient quantity of oak shavings be digested in spirit of wine; and also at the same time of shavings be digested in water; and when both have acquired a strong tincture from the wood, let both be poured off from the shavings into different vessels, and both placed over a slow fire till reduced to the consistence of honey. In this condition, let the two extracts be intimately mixed together; which may be done by shaking them in a glass bottle.

fectually by adding a small quantity of loaf sugar, in fine powder, and well rubbing the whole together. By this means a liquid essential extract of oak will be procured, and always ready to be used as occasion shall require.

There are other methods in use for colouring brandies; but the best, besides the extract of oak above-mentioned, are common treacle and burnt sugar.

The treacle gives the spirits a fine colour; nearly resembling that of *French* brandy; but as its colour is but dilute, a large quantity must be used; this is not however attended with any bad consequences; for notwithstanding the spirit is really weakened by this addition, yet the bubble proof, the general criterion of spirits, is greatly mended by the tenacity imparted to the liquor by the treacle. The spirit also acquires from this mixture a sweetish or luscious taste, and a fulness in the mouth; both which properties render it very agreeable to the palate of the common people, who are, in fact, the principal consumers of these spirits.

A much smaller quantity of burnt sugar than of treacle will be sufficient for colouring the same quantity of spirits; the taste is also very different; for, instead of the sweetness impart-
ed

ed by the treacle, the spirit acquired by burnt sugar an agreeable bitterness, which means recommends itself to nicer palates, who are offended with a luscious spirit. This sugar is prepared by dissolving a quantity of sugar in a little water, and boiling it over the fire till it acquires a black

Either of the above ingredients, or burnt sugar, will nearly imitate the colour of old *French* brandy; but both of them will succeed, when put to the vitriolic solution.

Thus have I traced the subject of this art from its origin; shewn the method made use of by distillers, and pointed out the improvements that might be introduced into this art with great advantage; and shall now conclude this part with recommending the several improvements to those distillers who are desirous of improving their art, and proceeding on a rational basis, it being from such only that improvements are to be expected; for where the art is constantly carried on in the same manner, it is in vain to expect improvement, less chance should be kind enough to suggest an improvement in their way, which a rational theorist might easily led them to discover.

PART II.

CHAP. I.

Containing the Method of distilling Simple Waters.

THE instruments chiefly used in the distillation of simple waters are of two kinds, commonly called the hot still, or alembic, and the cold still; the former is represented in *Fig. 5*, and the latter in *Fig. 10*.

The waters drawn by the cold still from odouriferous plants are much more fragrant, and more fully impregnated with their virtues than those drawn by the hot still, or alembic; but the operation is much more slow and tedious by the former than the latter, so that very few care to comply with it: and, therefore, a method has been invented, to avoid the tediousness of the one, and the inconveniences of the other. The method is this:

A pewter body is suspended in the body of the alembic, and the head of the still fitted to the
pewter

pewter body ; into this body the ingredients to be distilled are put, the alembic fixed, the still head luted to the pewter body, the nose luted to the worm of the receiver, or worm.

The same intention will be answered by putting the ingredients into a glass alembic, and placing it in a bath heat, or *Bath Maria*, as we have before directed, Chap.

By either of these means, the ingredients have greater heat given them than in the hot still; and yet, by the interposition of the water in which the vessel containing them is placed, they are not so forcibly acted upon as in the common way of the hot still. Thus all those things which require a medium between the other; that is, those simple and mixed are of a texture between very volatile and fixed, are treated very properly by this way, but neither the very odoriferous simple nor those whose parts are very heavy and fixed can be treated this way but to disadvantage.

One of the greatest advantages of this way of trivance is, that waters so drawn are much cooler than from the hot still.

they have not so much of the fire in them, as the distillers term it; so that a hot spiey water, thus ordered, will taste as cool on the palate when just drawn, as it would, when drawn by the hot still, after it had acquired a considerable age.

CH A P. II.

Of Waters drawn by the Cold Still.

THE cold still is much the best adapted to draw off the virtues of simples, which are valued for their fine flavour when green, which is subject to be lost in drying. For when we want to extract from plants a spirit so light and volatile, as not to subsist in open air any longer than while the plant continues in its growth, it is certainly the best method to remove the plant from its native soil, into some proper instrument, where, as it dries, these volatile parts can be collected and preserved. And such an instrument is what we call the cold still, where the drying of the plant, or flower, is only forwarded by a moderate warmth, and all that rises is collected and preserved.

As the method of performing the operation by the cold still, is the very same, whatever plant or flower is used, the following instance of procuring

curing a water from rosemary, v
dantly sufficient to instruct the
tioner in the manner of conductin
in all cases whatever.

Take rosemary, fresh gathered,
tion, with the morning dew upon
lightly and unbruised upon the pla
of the still. Cover the plate with
head; and apply a glass receiver t
it. Make a small fire of charco
plate, continuing it as long as any
over into the receiver. When n
comes over, take off the still head
the plant, putting fresh in its ste
ceed as before; continue to repe
tion successively, till a sufficient
water is procured. Let this distil
kept at rest in clean bottles, clos
some days in a cold place; by th
will become limpid, and powerf
nated with the taste and smell of

In this water are contained the li
consisting of its own proper parts, v
without difficulty separated from th
cleave to it even in the drying. Th
by sticking to the outside, receiv

parts of the plant, which being elaborated the day before, and exhaled in the night, are hereby detained, so that they concrete together into one external liquid, which is often viscid, as appears in manna, honey, &c. This water also contains the fluid, which exhales from the vessels of the rosemary, and which principally consists of simple water, as appears upon long standing in an open vessel, when the taste and odour vanishing, leave an insipid water behind. Another part of this water is that subtile, volatile substance, which give the plant its peculiar taste and odour; for this the senses discover in it; but what remains after the process is finished, scarce afford any thing thereof. The same water seems also to contain seeds, or other little bodies; which, in a certain time, usually grow into a kind of thin, whitish weed, suspended in the middle of the water; and daily increasing or spreading itself, becomes a mucilage, which did not appear at first.

I have kept these waters undisturbed in separate well closed vessels, and observed that in a year's time, they began to appear thick, which thickness gradually increased every year, till at length the liquor grew ropy and mucilaginous. Hence we see, that this water contains the elementary

mentary water, and presiding spirit, a spirit small in bulk, but rich in virtue, inhibiting the specific smell and taste of the subject. This water, therefore, in exact proportion to a vehicle to that spirit, which contains a substance, extremely volatile, and the most valuable, the particular substance, the particular plant, leaving the remainder excluded in respect: and hence proceeds the virtues of these waters, which principles are drawn upon their native spirit. For this reason, these plants, having a brisk mobility, afford a vehicle, and raises the spirits in case of the

If the vessel be close stopped, and kept in a cool place, the waters drawn by this method will retain their virtues for a year, if carefully kept, or any crack should appear in the glass, their extremely volatile spirit will fly off, and leaves the water vapour.

Hence we learn what it is that gives plants their being dried in the summer time; that the water and spirit we have been describing is drawn from the nature of that fluid which rises from plants in distillation, that the matter properly is in plants, that the particular odour; that is, their pre-

Lastly, we hence learn, in some measure at least, what those *effluvia* are, which principally in the summer season, and in the open air, exhale from vegetables; for it is highly probable, that these constant exhalations of plants, especially in the day-time, have a near agreement in their peculiar nature, with the liquor extracted by the cold still, though differing in this, that the exhalation made from the parts is continually recruited by the root; whilst by our operation, those parts alone are collected, which are driven off from the plant, after being gathered, and no longer supplied with fresh nourishment.

C H A P. III.

Of the Distilling Simple Waters by the Alembic.

THE plants designed for this operation are to be gathered when their leaves are at full growth, and a little before the flowers appear, or, at least, before the seed comes on; because the virtue of the simple expected in these waters is often little, after the seed or fruit is formed, at which time plants begin to languish; the morning is best to gather them in, because the volatile parts are then condensed by the coldness of the night, and kept in by the tenacity of the dew, not yet exhaled by the sun.

This

This is to be understood, when the distilled water resides principally in the leaves of plants; as it does in mint, pennyroyal, rue, and many more. It differs when the aromatic virtue is in the flowers, as in roses, lilies, &c. in which case we choose them whilst they smell the sweetest, and before they are quite opened, or the morning dew still hanging on

In other plants the seeds are the principal part, as in anise, caraway, cumin, &c. and the flower are indolent, and the sides in the seed alone, where it is by its remarkable fragrance, and We find that seeds are more fully perfected in virtue, when they arrive at perfection

We must not omit that these virtues are found only in the roots of plants, as appears in avens, whose roots smell like a rose. This kind should be gathered for the purpose, at that time when they are in the height of these virtues: which is generally in the latter end of the year, just before they begin to decay, when they are to be dug up in autumn

If the virtues here required be contained in the barks or woods of vegetables, then these parts must be chosen for the purpose.

The subject being chosen, let it be bruised, or cut, if there be occasion, and with it fill two thirds of a still, leaving a third part of it empty, without squeezing the matter close: then pour as much rain, or river water into the still as will fill it to the same height; that is; two thirds together with the plant: fit on the head, luting the juncture, so that no vapour may pass through: and also lute the nose of the still head to the worm: Apply a receiver to the bottom of the worm, that no vapour may fly off in the distillation; but that all the vapour being condensed in the worm, by cold water in the worm-tub, may be collected in the receiver.

Let the plant remain thus in the still to digest for twenty-four hours, with a small degree of heat. Afterwards raise the fire, so as to make the water in the still boil; which may be known by a certain hissing noise proceeding from the breaking bubbles of the boiling matter: as also by the pipe of the still-head, or the upper end of the worm, becoming too hot to be handled; or the smoaking of the water in the worm-tub heated

heated by the top of the worm ; the following of one drop imm another, from the nose of the form an almost continual stream signs we know that the requisite if it be less than a gentle ebullit of the simple, here expected, will on the contrary, when the fire is water hastily rises into the still-head both the worm and the distilled plant being also raised, it blocks for which reason it is no bad cause piece of fine linen before the pipe head, that, in case of this accident may be kept from stopping up notwithstanding this precaution, too fierce, the plant will stop up still-head, and consequently the finding no passage will blow off and throw the boiling liquor about so as to do a great deal of mischief suffocate the operator, without a pipe and the more oily, tenacious, gum the subject is, the greater the danger this accident; because the liquor frothy and explosive.

Let the due degree of fire the

fully observed, and equally kept up, as long as the water, distilling into the receiver is white, thick, odorous, sapid, frothy, and turbid; for this water must be carefully kept separate from that which follows it. The receiver, therefore, should be often changed, that the operator may be certain that nothing but this first water comes over; for there afterwards arises a water that is transparent, thin, and without the peculiar taste and flavour of the plant, but generally somewhat tartarish and limpid, though somewhat obscured and fouled by white dreggy matter; and if the head of the still be of copper, and not tinned, the acidity of this last water corrodes the copper, so as to become green, nauseous, emetic, and poisonous to those who use it, especially to children, and persons of weak constitutions.

The first water above described, principally contains the oil and presiding spirit of the plant; for the fire, by boiling the subject, dissolves its oil, and reduces it into small particles, which are carried upwards by the assistance of the water, along with those parts of the plant that become volatile with their motion. And, if the vessels are exactly close, all these being united together, will be discharged without loss, and without much alteration, into the receiver: and consequently

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The water of the second runn
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for conducting of distillation : fo
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ceases to come over, the preparat
luable and perfect ; but if, throu
increasing that quantity, more be

the latter acid part suffered to mix with the first running, the whole will be spoiled, or at least, rendered greatly inferior to what it would otherwise have been.

Such is the general method of procuring simple waters, that shall contain the volatile virtues of the plants distilled; some rules are, however, necessary to render it applicable to all sorts of plants; these rules are the following:

1. Let the aromatic, balsamic, oily, and strong-smelling plants, which long retain their natural fragrance, such as balm, hyssop, juniper, marjoram, mint, origanum, pennyroyal, rosemary, lavender, sage, &c. be gently dried a little in the shade; then digest them, in the same manner as already mentioned, for twenty-four hours, in a close vessel, with a small degree of heat, and afterwards distill in the manner above delivered, and thus they will afford excellent waters.

2. When waters are to be drawn from barks, seeds, or woods that are very dense, ponderous, tough, and resinous, let them be digested for three, four, or more weeks, with a greater degree of heat in a close vessel with a proper quantity of salt added, to open and prepare them the

better for distillation. The quantity of water is here added, partly to open the pores more, but chiefly to prevent putrefaction, which otherwise would certainly happen in some time, and with such a heat as is used in this case, and so destroy the smell and virtues expected from the process.

3. Those plants which diffuse their fragrance at some distance from them, and the flowers of which should immediately be distilled as soon as they are gathered in a proper season, without any previous digestion: thus borage, bugloss, jessamine, lilies, lilies of the valley, roses, &c. require no heat, digestion, or lying in the sun.

CHAP. IV.

Of increasing the Virtues of Simple Waters by the means of Cohobation

BY cohobation is meant the redistilling of the distilled water procured in the manner described in the preceding chapter, upon the same fresh plant. The operation is performed in the following manner:

Take the plant and liquor reu

still after the operation described in the foregoing chapter is performed, and press them strongly in a bag for that purpose, that all the decoction may be obtained ; and with this mix all the water before drawn over. Return this mixture into the still, and a fresh quantity of the same plant, and, if necessary, as much water as will make the former proportion to the plant. Close all the junctures exactly, and digest the whole in a gentle degree of heat for three days and three nights, that the herb, being so long steeped in its own liquor may be opened, loosened, and disposed the easier to part with its virtues. This digestion is of great service ; but if protracted too long, induces a change tending to putrefaction. Let the water now be distilled off, in the same manner as before ; only proceeding more cautiously, and somewhat more slowly at first ; because the liquor in the still being now thicker, more impregnated with the plant, and therefore more apt to swell upon feeling the fire, it easily boils over ; but after about half of the expected water is come off, the fire may be gradually raised.

By this method, and carefully observing to change the receiver as soon as the first water is all come over, a noble liquor, highly impregnated with the virtues of the plant, will be obtained

tained. And as this operation may be repeated as often as desired, the virtues of the oil may thus be exalted to any degree the artist may think proper; which shews the extraordinary efficacy of distillation. This method I particularly recommend for making the oil of balm, elder flowers, roses, and violets, but sparingly furnished with spirit of oil.

CHAP. V.

*Of the Method of procuring a
Essence from Vegetables, by previously
Treating Vegetables before Distillation.*

BY this elegant method we obtain the virtues of plants very little altered from what they naturally are, though rendered more penetrating and volatile. The operation is performed in the following manner.

Take a sufficient quantity of any plant you desire, cut it, and bruise it if necessary; put it in a cask, leaving a space empty at top, six or eight inches deep; then take as much white wine as when added, fill the cask to the top; stir it including the plant, and mix the oil with the eighth part of honey, if it be cold.

ther; or a twelfth part, if it be warm: in the summer the like quantity of coarse unrefined sugar might be added instead of honey, or half an ounce of yeast to each pint of water will have the same effect, though most prefer honey for this purpose. When the proper quantity of honey is added to the water, let it be warmed and poured into the cask, and set it in a warm place to ferment for two or three days; but the herbs must not be suffered to fall to the bottom, nor the fermentation above half finished. The whole must then be immediately committed to the still, and the fire raised by degrees; for the liquor containing much fermenting spirit, easily rarefies with the fire, froths, swells, and therefore becomes very subject to boil over; we ought therefore to work slower, especially at first.

By this method there will come over, at first, a limpid, unctuous, penetrating, odorous, sapid, liquor, which is to be kept separate; after this, there follows a milky, opaque, turbid liquor, still containing something of the same taste and odour; and at length comes one that is thin, acid, without either smell, or scarce any property of the plant.

The first water, or rather spirit, may be kept

several years, in a close vessel, without growing rropy. It also excels in taste and odour of the plant, unaltered: but if less honey were employed, or the fermentation continued a smaller time, the distilled liquor coming would be white, thick, opaque, frothy, and perfectly retain the taste of the plant, or much less altered in the former case; though the water will be strong and penetrating. After this is distilled, a clear, limpid, inodorous liquor will remain.

And thus may simple waters be kept long keeping without spoiling, and without the generation of inflammable spirit generated by fermentation, serving excellently to

CHAP. VI.

Of the Simple Waters commonly used

SIMPLE waters are not so much in present as they were formerly; and the reason for their being neglected, is the methods used in distilling them; which is carried on in the same manner with spirit, though some should be gently distilled.

distilled green; some should be drawn with the cold, and others with the hot still.

The general rule that should be observed with regard to the hot still is, that all herbs should have twice their weight of water added to them in the still; and not above a fourth or a sixth part of it drawn off again; for simple waters have their faints, if drawn too low, as well as those that are spirituous.

Some plants, particularly balm, require to have the water drawn from them cohobated, or poured several times on a fresh parcel of the herb, in order to give it a proper degree of strength or richness. Others, on the contrary, abound too much with an essential oil that floats on the distilled water; in this case all the oil should be carefully taken off. Lastly, those that contain a more fixed oil, should be imperfectly fermented in the manner laid down in the preceding chapter, before they are distilled; of this kind are carduus, camomile, &c.

The simple waters now commonly made, are orange-flower-water, rose-water, cinnamon-water, fennel-water, peppermint-water, spearmint-water, balm-water, pennyroyal-water, Jamaica

pepper-water, castor-water, sim-
orange-peel, and of dill-seed.

C H A P. VII.

Of Orange-flower Water

THE orange-tree grows plentifully in *Spain*, and *Portugal*, and bears fruit all the year; but the fruit is chiefly in October and November.

The flowers grow on the young branches among the leaves; they are white, and consist of a single cup-fashioned leaf, with several parts, with several yellow stamens in the middle, and of a fragrant odoriferous

Some degree of attention is required in making a simple and odoriferous water from the flowers; the fire must be carefully regulated, for too small a degree will not be sufficient to extract the essential oil of the flowers, in which the odoriferous flavour consists: and, on the other hand, too strong a fire destroys the fragrance of the water, and is very apt to scorch the flowers. To give the water an empyreumatic flavour, a small quantity should also be taken to fasten the

the end of the worm with a bladder, to prevent the volatile parts from evaporating :

The quantity of water, also, should be carefully attended to, if you hope to succeed in the operation. The following receipts will answer the intention.

Receipts for Orange-flower-water.

Take twelve pounds of orange-flowers, and twenty-four quarts of water, and draw over three pints. Or,

Take twelve pounds of orange-flowers, and sixteen quarts of water : draw over fifteen quarts, carefully observing what has been observed at the beginning of the chapter with regard to the regulation of the fire.

The manner of making Double Orange-flower-water, and the Essential Oil, or Quintessence of Orange-flowers.

Having shown how to make simple orange-flower-water, we shall now shew how to make double orange-flower-water, and the essential oil, or quintessence of orange-flowers.

Double orange-flower-water is made, by distilling the orange-flowers in a cold still ; in the

manner laid down in the first chapter. The water extracted in this manner is very fragrant, odoriferous and grateful, being what is called double orange-flower-water. The most odoriferous water will be obtained by distilling the flowers in *Balneum Mariæ* without any addition in the still. If the cold still be used, add to it as many flowers as the head will hold, wash them and then make a gentle fire under the still, and as soon as you perceive the still begins to work, fasten the receiver to the neck of the still with a bladder. The same caution must be observed if the flowers are distilled in *Balneum Mariæ*.

To make this water to perfection, the flowers should be fresh gathered in the morning, before the dew upon them, if possible; and they should be picked from the leaves. You should also make choice of the largest flowers, for these yield most in distillation. The operation will be brisk when the flowers are distilled in *Balneum Mariæ*; because the operation is more in performing than by the common way, and the flowers are not herein damaged by being burnt at the bottom of the cucurbit. This would have your water of a fine smell, and it is cohobated on fresh flowers.

With this double water, the essential oil or quintessence will come over, and float on the surface of the water. But a much larger quantity of it will be obtained, by cohobating the water on fresh flowers in *Balncum Mariæ*. The essential oil is at first of a green colour, but after some days it will turn reddish. The essential oil is easily separated from the water, by the separating-glass, in the following manner: stop the spout of the separating-glass with a cork, and then fill it with the orange-flower water; when it has stood a small time the oil will float on the surface. Then pull out the cork and let the water run out at the spout into another receiver placed for that purpose. As the water runs out at the spout of the separating-glass, let it be supplied at the mouth, that the separating glass may be always full of water, till the whole is in this manner poured into it. Then, by gently inclining the glass, pour out all the water in it through the spout, and the oil will remain in the separating-glass, and may be poured into another bottle, and kept separate from the water. The double orange-flower water is odoriferous; but the essential oil much more so.

Orange-flower water is not at present so much used as formerly; but as it is a very odoriferous

water, I thought the method of making it would not be unacceptable to the young

The essential oil, or quintessence of flowers, will make a very grateful mixture, mixing it with a clean proof spirit. The method of mixing it is this :

Take some fine loaf-sugar, and a small quantity of oil you intend to use with the spirit, and rub them well together in a mortar, which is what the chemists call an oleosaccharum. Put this oleosaccharum to the spirit ; mix them well together, and add it with sugar to your taste. If the spirit is strong, it may be lowered with water. You must observe that if you add water, it will bring the spirit considerably below the proof, and turn milky ; and in order to render it clear, you must filtrate it through thick flannel paper. Twenty drops of the essential oil will be sufficient for a pint of spirit, in proportion to a larger quantity.

CHAP. VIII.

Of Rose-water.

THE damask rose is the species which is best used in this operation ; it is of

smell, and flowers in June and July. The water may be made either by the hot still, the cold still, or the *Balneum Mariæ*. If the hot still be used, the leaves picked from the stalks must be put into the still with a sufficient quantity of water to prevent an empyreuma, and the water drawn off by a gentle fire. The receiver must be luted with a bladder to the nose of the worm, to prevent the finest and most volatile parts from evaporating, which they would otherwise do, to the great prejudice of the water.

If the cold still be used, the rose leaves either with the dew on them, or sprinkled with water, must be laid on the iron plate, and covered with the conical head. A gentle fire must then be made under the plate, and a receiver luted with a bladder to the nose of the still. The water will gradually distil into the receiver, and be strongly impregnated with the odoriferous parts of the roses.

The same method with regard to the *Balneum Mariæ* must be used in the distillation of roses as in that of orange-flowers, and therefore need not be repeated here. We shall therefore only observe, that rose-water, drawn either by the cold still, or the *Balneum Mariæ*, is much preferable to that drawn by the hot still.

The

The essence, or essential oil of roses, is reckoned upon as one of the most valuable products of the world; but at the same time the roses cannot be procured in any quantity. As the roses are made in *Italy*, but it has always been impossible to procure it here; and the method of acquiring this valuable essence is not, I presume, be disagreeable to you.

Take a quantity of damask roses, and put them into a proper vessel, with a sufficient quantity of water, adding some mineral acids, of salt, vitriol, &c. In this menstruum the roses be digested for fifteen days; then put the whole into an alembic, and distill the water with a pretty brisk fire. Between the common receiver, a separating receiver be placed under the nose of the alembic, and the receiver added to the tube of the alembic glass. By this means all the oil of roses will float on the surface of the water in the receiving-glass, and may easily be separated when the operation is finished.

CHAP. IX.

Of Cinnamon-water.

CINNAMON is a thin fine bark, which grows in a sort of little pipes, from the thick

goose-quill, to that of a man's thumb, and sometimes more, and about two or three feet long. Its colour brownish, with a mixture of red. It is of an extremely aromatic smell, and of an acrid and pungent, but very agreeable taste. It is the interior or second bark of a tree that grows plentifully in *Ceylon*. The people who gather it take off the two barks together, and immediately separating the outer one, which is rough, and has very little fragrancy, they lay the other to dry in the shade in an airy place, where it rolls itself up into the form wherein we see it.

The greatest cheats in the sale of cinnamon, are the selling such as has already had its essential oil distilled from it, and dried again, and the imposing cassia lignea in its place. The first of these is discovered by the want of pungency in the cinnamon; the second by this, that the cassia, when held a little time in the mouth, becomes mucilaginous, which the true cinnamon never does. Cinnamon is a noble drug, endued with many capital virtues; it strengthens the viscera, assists concoction, dispels flatulencies, and is a pleasant cardiac.

Recipe

Recipe for one Gallon of simple C

Take a pound of the best c
powdered, digest for twenty-four
gallons of water; put the whole
and draw over one gallon with a

The oil of cinnamon, in wh
virtue of the drug consists, is v
and therefore will not come ove
less the fire, be pretty brisk, esp
simple water. It will therefor
attempt distilling simple cinna
the *Balneum Mariæ*.

CHAP. X.

Of Fennel-Water.

FENNEL-WATER is extract
larger and more beautiful than
by our common fennel; it is cal
anel seed, being of a fragrant smell
sweet taste, and is cultivated i
Italy. It is to be chosen, new, l
but when damp or dusty, to be r

Recipe for one Gallon of Fennel-Water.

Take one pound of sweet fennel-seeds, and two gallons of water; put them into an alembic, and draw off one gallon with a gentle fire.

CHAP. XI.

Of Peppermint-Water.

PEPPERMINT is a very celebrated stomatic, and on that account greatly used at present, and its simple water often called for.

Recipe for a Gallon of Peppermint-Water.

Take of the leaves of dried peppermint, one pound and a half; water, two gallons and a half; put all into an alembic, and draw off one gallon with a gentle fire.

The water obtained from peppermint by distillation in *Balneum Maria*, is more fragrant and more fully impregnated with the virtues of the plant than that drawn by the alembic. The same may be said with regard to that extracted by the cold still; when the cold still is used the
plant

plant must be green, and if pos
to the still with the morning de

CHAP. XII.

Of Spearmint-Water.

SPEARMINT is also, like
great stomachic, and therefore c

Recipe for one Gallon of Spear

Take of the leaves of dried
pound and a half; water two
half; draw off by a gentle fire c

This water, like that drawn fr
will be more fragrant if distille
Mariæ, or the cold still; but if
used, the same caution must b
distilling the plant green.

CHAP. XIII.

Of Balm-Water.

BALM is a plant well known
It flowers in July, and is of a

your ; but so weak, that it is soon dissipated and lost ; nor is it easy to dry it so as to preserve its natural scent.

Balm-water, therefore, should be drawn when the plant is green ; and in order to procure the water in full perfection, it should be cohobated, or returned several times upon fresh parcels of the plant ; by this means a water may be procured from balm extremely rich, and of considerable use as a cordial.

If the *Balncum Mariæ* be used, the water is much better than that drawn by an alembic. The water drawn from this plant by the cold still will also be very fragrant, and highly impregnated with the virtues of the plant.

CHAP. XIV.

Of Pennyroyal-water.

PENNYROYAL, a plant very common in *England*, is very warm, and its parts very subtle and penetrating : it is one of the first plants in esteem in the present practice, as well as in former ages, as an attenuant and uteride. It is good in flatulencies and suppressions of urine,
and

and by many is greatly recommended for the cure of dysenteries, jaundice, and other chronic diseases. The water communicates its virtues to water, and its simple water has, perhaps, more efficacy than any other kept in the shop. It is a necessary requisite in order to obtain a water, which is impregnated with the virtues of the plant. To prepare it on fresh parcels of the plant, which is drawn from green pennyroyal, which generally contains so large a portion of essential oil, that it is necessary to use a glass that floats on the surface of the water, and is rated in a rating-glass.

Recipe for one Gallon of Pennyroyal Water

Take of, the dried leaves of pennyroyal, one pound and a half, of water three gallons. Boil off one gallon with a gentle fire.

The water drawn from green pennyroyal in the cold still, is very fragrant, and is impregnated with the virtues of the plant.

CHAP. XV.

Of Jamaica Pepper-water

JAMAICA pepper, or pimento, is the fruit of a tall tree growing in the most

of *Jamaica*, where it is much cultivated, because of the great profit arising from the cured fruit, sent in large quantities annually into *Europe*.

It is gathered, when green, and exposed to the sun for many days on cloths, and frequently shook and turned, till thoroughly dry; great care is taken during the time of drying to defend the fruit from the morning and evening dews; when thoroughly dried it is sent over to us.

It is a very noble aromatic, and deserves to be used more frequently than it is at present. The simple water drawn from it is a better carminative than any other simple water at present in use.

Recipe for a Gallon of Jamaica Pepper-water.

Take of *Jamaica* pepper half a pound, water two gallons and a half; draw off one gallon with a pretty brisk fire. The oil of this fruit is very ponderous, and therefore this water is best made in an alembic.

C H A P. XV

Of Castor-water

THIS drug is brought to us in bags that naturally contained much resemble the testicles of man in their dry state, and when on the backs of some creatures, that it is no wonder they did not examine their situation on the ground; they took them for such; it is, however, a secreted matter, contained in the bags, and receive it.

Castor is an indurated substance, which was a matter once fluid; the thinner part has been evaporated by drying, and is now a hard and friable matter, of a moderate consistence and of a deep dusky brown colour, somewhat acrid and bitterish, and has a strong foetid smell, which, to some, is disagreeable.

The animal that produces this matter, the authors called castor and fiber, but now is called gar, the beaver.

The castor of several parts of the world differ in goodness, and in regard to the care taken in the drying. The *Russian* castor has long been the most esteemed, and the *New England* kind the least.

Castor water is of great use in hysteric cases, and all diseases of the nerves; in epilepsies, palsies, and all complaints of that kind.

Recipe for making one Gallon of Castor-water.

Take of *Russia* castor an ounce, of water three gallons; draw off one gallon with a pretty brisk fire.

CH A P. XVII.

Of Orange-peel-water.

THE orange is a fruit too well known to need a description here. The water is very grateful to the taste, and often used in fevers, &c.

Recipe for one Gallon of Orange-peel-water.

Take of the outward yellow rind of *Seville* oranges, four ounces; water, three gallons and a half;

half; draw off one gallon by the
a pretty brisk fire.

CHAP. XVI

Of the Water of Dill

DILL greatly resembles fennel stalk, and leaf, but rarely grows much branched; it bears the same low umbels of flowers, after which rounder, broader, and flatter than fennel. The whole plant is of a sweeter pleasant than fennel. It grows in flowers and seeds in July and August. Water drawn from the seeds is highly minative, good in cholics, and arising from wind.

Recipe for making a Gallon of Dill-seed.

Take of dill-seed one pound, and draw off by the alembic a pretty brisk fire.

The waters we have enumerated are those now commonly in use

are many other herbs, from whence waters of great use may be drawn ; but as the method of distillation is the same in all, it would be of no use to extend these instructions to a greater length ; we shall therefore only observe, that when unfavourable seasons have prevented the herbs from attaining a proper degree of perfection, it will be necessary to increase their proportion in extracting the several waters ordered to be drawn by the alembic.

PART III

Of making Compound Waters &c.

THE perfection of this grand tillery depends upon the observation of the following general rules, easy to be practised.

1. The artist must always be of a well cleansed spirit, or one freed from all essential oil, as were before observed Chap. xxiii. For as a compound is nothing more than a spirit impregnated with essential oil of the ingredients, it is necessary that the spirit should have deposi-

2. Let the time of previous digestion be proportioned to the tenacity of the ingredients, and the ponderosity of their oil. Thus cinnamon require a longer digestion than calamus aromaticus, or peel. Sometimes cohobation (see Part II. Chap. iii.) is necessary; as in making the strong cinnamon-w-

the essential oil of cinnamon is so extremely ponderous, that it is difficult to bring it over the helm with the spirit without cohobation.

3. Let the strength of the fire be proportioned to the ponderosity of the oil intended to be raised with the spirit. Thus, for instance, the strong cinnamon-water requires a much greater degree of fire than that from lax vegetables, as mint, balm, &c.

4. Let only a due proportion of the finest parts of the essential oil be united with the spirit; the grösser and less fragrant parts of the oil not giving the spirit so agreeable a flavour, and at the same time renders it thick and unsightly. This may in a great measure be effected by leaving out the faints, and making up to proof with fine soft water in their stead.

These four rules carefully observed will render this extensive part of distillation far more perfect than it is at present. Nor will there be any occasion for the use of burnt alum, white of eggs, isinglass, &c. to fine down cordial waters: for they will presently be fine, sweet and pleasant tasted, without any farther trouble.

CHAP. I.

Of strong Cinnamon-Water.

WE have already (Chap. viii.) described this drug, and given some choosing the best sort, to which the following is preferred.

Recipe for Sixteen Gallons of strong Cinnamon-Water.

Take eight pounds of fine cinnamon, and sixteen gallons of clean rectified spirit, and two gallons of water. Put them in a vessel, and digest them twenty-four hours in a gentle heat; after which draw off sixteen gallons, and put the residue to a pretty strong heat.

I have ordered a much larger quantity of cinnamon than is common among the apothecaries, because, when made in the manner above, it is justly looked upon as one of the best medicinal waters of the shops; but where the common way of two pounds to ten gallons of spirit, as some have ordered, is used, it is a great position on the buyer. Some also

goods cheaper, use equal quantities of cinnamon and cassia lignea; but by this means the cordial is rendered much worse; and, therefore, if you desire a fine cinnamon-water, the above recipe will answer your intention; but if a cheaper sort be desired, you may lessen the quantity of cinnamon, and add cassia lignea in its stead. If you would dulcify your cinnamon-water, take double-refined sugar, what quantity you please; the general proportion is about two pounds to a gallon, and dissolve it in the spirit after you have made it up proof with clean water. One general caution is here necessary to be added, namely, that near the end of the operation you carefully watch the spirit as it runs into the receiver, in order to prevent the faints mixing with the goods. This you may discover by often catching some of it, as it runs from the worm, in a glass, and observing whether it is fine and transparent; for as soon as ever the faints begin to rise, the spirit will have an azure, or bluish cast. As soon, therefore, as you perceive this alteration, change the receiver immediately; for if you suffer the faints to mix with your other goods, the value of the whole will be greatly lessened. With regard to the faints, they are to be kept by themselves, and poured into the still when a fresh parcel of the same goods is to be made.

It is also necessary to observe, that the distillers call all proof, *double goods*; and those of single proof, *single*. This observation is sufficient to instruct the young man, who may at any time turn his proof into single.

CHAP. II.

Of Clove Water

CLOVES, from whence this name, are the fruit of a tree growing in the *Molucca* islands. The figure of this fruit is small, and not very thick, resembling more a nail. The surface of it is of the colour a dusky brown, with a reddish tinge. The whole fruit is of a fragrant smell, and of an acid, very aromatic taste. Cloves are the largest, fairest, darkest colour, and most unctuous on the surface between the fingers. Cloves are good against all distempers arising from cold causes. They strengthen the sight, and are good against faintness of the heart, and crudities

Recipe for Fifteen Gallons of Clove Water.

Take of cloves bruised four pounds, pimento, or all-spice, half a pound, clean proof of spirit sixteen gallons; let it digest twelve hours in a gentle heat, and then draw off fifteen gallons with a pretty brisk fire. Or,

Take *Winter's* bark four pounds, pimento six ounces, cloves one pound and a quarter, clean proof spirits sixteen gallons: digest, and draw off as before.

The *Winter's* bark, added in the second recipe, is the bark of a large tree, growing in several parts of *America*, and has its name from its discoverer, Captain *Winter*.

The outer rind of it is of an uneven surface, and of a loose texture, very brittle, and easily powdered. The inner part, in which the principal virtue resides, is hard, and of a dusky reddish brown colour. It is of an extremely fragrant and aromatic smell, and of a sharp, pungent, spicy taste, much hotter than cinnamon in the mouth, and leaving in it a more lasting flavour. It is to be chosen in pieces not too large, hav-

H. 4 ,

ing

ing the inner or brown part firm of a very pungent taste. It is eaten; but in that case it should be rejected, as having lost the most of its virtue.

If you desire to have your clo may be coloured either by a str cochineal, alkanet-root, or corn. The first gives the most elegant not often used on account of its

You may dulcify it to your pal ing in it double-refin'd sugar. S ness use a coarser kind of sugar ders the goods foul and unsightl to save expences, make what water, with cloves and caraway-s portion they generally use is ha cloves and two drachms of cara gallon of spirit.

CHAP. III.

Of Lemon Water.

THE peel of the lemon, the p king this water, is a very grate matie, and on that account very repairing and strengthening the

Recipe for Ten Gallons of Lemon-Water.

Take of dried lemon-peel four pounds, clean proof spirit ten gallons and a half, and one gallon of water. Draw off ten gallons by a gentle fire. Some dulcify lemon water, but by that means its virtues, as a stomachic, are greatly impaired.

CHAP. IV.

Of Hungary Water.

RÔSEMARY, the principal ingredient in Hungary water, has always been a favourite shrub in medicine; it is full of volatile parts, as appears by its taste and smell. It is a very valuable cephalic, and is good in all disorders of the nerves; in hysteric and hypochondriac cases, in palsies, apoplexies, and vertigoes. Some suppose that the flowers possess the virtues of the whole plant in a more exalted degree than any other part; but the flowery tops, leaves, and husks, together with the flowers themselves, are much fitter for all purposes, than the flowers alone.

Recipe for Ten Gallons of Hungary

Take of the flowery tops, with flowers of rosemary fourteen pounds, spirit eleven gallons and a half, wash well, distill off ten gallons with a gentle heat. If you perform this operation in a *maria*, your Hungary water will be more perfect, if drawn by the common alembic.

This is called Hungary water, first made for a princess of that kindred. Some add lavender flowers, and other flowers of orice-root; but what is most esteemed is made with rosemary only.

CHAP. V.

Of Lavender Water.

THERE are two sorts of lavender water, the simple and compound; the first is used externally on account of its fragrant and aphrodisiacal virtues; the latter internally for a number of disorders.

Recipe for Ten Gallons of Simple Lavender Water.

Take fourteen pounds of lavender flowers, ten gallons and a half of rectified spirit of wine, and one gallon of water; draw off ten gallons with a gentle fire; or, which is much better, in *Bal-neum Mariæ*.

Both the Hungary and lavender water, may be made at any time of the year without distillation, by mixing the oil of the plant, with highly rectified spirit of wine. In order to this, when the plant is in perfection you should distill a large quantity of it in water, with a very brisk fire; placing under the nose of the worm the separating-glass (described page 31. Part I. of this Treatise,) by which means you will obtain the essential oil of the plant, in which both its fragrancy and virtue reside. Having procured the essential oil of the plant, the water may readily be made in the following manner: Put the rectified spirit into the receiver (described page 32. fig. xii.) and let an assistant shake it with a quick motion: whilst the spirit is thus agitated, drop in leisurely the essential oil, and it will mix without any foulness or milkiness.

The oils of lavender and rosema
ed cheaper from abroad, than they
here ; but these oils will not mix v
without rendering it foul and milk
fore, if you propose making Hung
der water in this manner, it will b
extract the oil yourself.

*Recipe for making Three Gallons
Lavender Water.*

Take of lavender water above d
gallons, of Hungary water one gal
and nutmegs of each three ounce
saunders one ounce ; digest the w
in a gentle heat, and then filter it
add saffron, musk, and ambergris,
scruple ; but these are now gener

This compound lavender water
celebrated in all nervous cases.
palsies, and loss of memory, it is
service ; and has been so much re
efficacy in these complaints, as a
sally to obtain the name of *Palsy*

CHAP. VI.

Of Citron Water.

THE citron is an agreeable fruit resembling a lemon in colour, smell, and taste. The inside is white, fleshy and thick, containing but a small quantity of pulp, in proportion to the bigness of the fruit.

Recipe for making Ten Gallons of Citron Water.

TAKE of dry yellow rinds of citron four pounds, clean proof spirit ten gallons and a half, water one gallon; digest the whole twenty-four hours with a gentle heat; draw off ten gallons with a gentle fire; or, which is much better, in *Balneum Mariæ*, and dulcify it with fine sugar to your palate. Or,

Take of dry yellow rinds of citrons three pounds, of orange peel two pounds, nutmegs bruised three quarters of a pound; digest, draw off, and dulcify as before.

This is one of the most pleasant cordials we have; and the addition of the nutmegs, in the
second

second receipt, increases its virtue
and stomachic.

CHAP. VII.

Of Anised Water.

ANISEED is a small seed of
shape, each way ending in an ob
surface is very deeply striated, and
and lax substance, very light and
Its colour is a kind of pale olive
grey: it has a very strong and ar
and a sweetish but acid taste, but
not disagreeable. Aniseed shou
large, fair, new, and clean, of a
and acid taste. The plant that p
cultivated in many parts of *Fra*
finest seed comes from the isla
where it is raised for sale, and wh
part of *Europe* is supplied.

Recipe for Ten Gallons of Anis

Take of aniseed bruised two p
spirit twelve gallons and a half, w
lon; draw off ten gallons, with a m
Or,

Take of the seeds of anise and angelica, each two pounds, proof spirit twelve gallons and a half; draw off as before.

Aniseed water should never be reduced below proof, because of the large quantity of oil with which the spirit is impregnated, and which will render the goods milky and foul, when brought down below proof; but if there be a necessity for doing this, the goods must be filtrated either through paper or the filtrating bag, which will restore their transparency.

Aniseed water is a good carminative, and therefore in great request among the common people against the cholic.

CHAP. VIII.

Of Caraway Water.

CARAWAY-SEED is of an oblong and slender figure, pointed at both ends, and thickest in the middle. It is straightened on the surface, considerably heavy, of a deep brown colour, and somewhat bright or glossy. It is of a very penetrating smell, not disagreeable, and of a hot, acrid, and bitterish taste. Caraway-seed
is

is to be chosen large, new, and not dusty, and of an agreeable smell which produces the caraway-seed in the meadows of *France* and many other places; but is sown for the sake of the seeds in *Germany* and other parts of *Europe*.

Recipe for making Ten Gallons of Caraway-water.

Take of caraway-seeds bruised proof spirit twelve gallons, water draw off ten gallons, or till the rise; make the goods up with clear wine, and dulcify with common sugar to your taste.

Take of caraway-seed bruised and a half, orange or lemon-peel one pound, proof spirit twelve gallons; draw off, and dulcify as above.

Caraway-water, like that of *France*, is good carminative; but not so much pleasanter.

CHAP. IX.

Of Cardamom Seed Water.

THE seed from whence this water takes its name, is called by botanists *Cardamum Minus*, or the lesser cardamom: to distinguish it from the *Cardamomum Majus*, or grains of paradise.

The lesser cardamom is a small short fruit, or membranaceous capsule, of a trigona form, about a third of an inch long, and swelling out thick about the middle; beginning small and narrow from the stalk, and terminating in a small but obtuse point at the end. It is striated all over very deeply with longitudinal furrows, and consists of a thin but very tough membrane, of a fibrous texture, and pale brown colour, with a faint cast of red. When the fruit is thoroughly ripe, this membrane opens at the three edges all the way, and shews that is internally divided by three thin membranes, into three cells, in each of which is an arrangement of seeds, separately lodged in two series. The seeds are of an irregular angular figure, rough, and of a dusky brown colour on the surface, with a mixture of yellowish and redish, and of white colour within.

They

They have not much smell, unless when they are much like camphor nose. They are of an acrid, aromatic hot taste. They should be chosen shut on all sides, and full of seed smell, and of an acrid aromatic taste.

Recipe for Ten Gallons of Cardamom Water

Take of the lesser cardamom two pounds and a half, of clean pebbles two gallons and a half, and of water ten gallons. Draw off ten gallons by a gentle heat, either dulcify it or not with fine sugar, as you please.

This water is carminative, assafoetida, and good to strengthen the head.

C H A P. X.

Of Aquila Mirabilis; or, the Wonder-working Stone

MOST of the ingredients in this stone have already been described, and the nutmegs will be given in Chapter XI. The cubebs and ginger remain to be described.

Cubebs are small dried fruit resembling

per-corn, but often somewhat longer; of a dark brown colour, composed of a wrinkled external bark; of an aromatic, though not very strong smell, and of an acrid and pungent taste, though less so than pepper; but its acrimony continues long on the tongue, and draws forth a large quantity of saliva. We have two kinds of cubebs, which differ only in their periods of gathering, both are produced from the same plant. The unripe cubebs are small, very wrinkled on the surface, and their nucleus, when broken, is flacid: but the ripe ones not so. Cubebs are brought from the Island of *Java*, where they grow in great abundance. They should be chosen large, fresh, and sound, and the heaviest possible. They are warm and carminative, and esteemed good in vertigoes, palsies, and disorders of the stomach.

Ginger is a root too well known to need a long description; it is sufficient to observe, that it is of a pale yellowish colour when broken, of a fibrous structure, and easily beat into a sort of woolly or long thready matter. It is of a very hot, acrid, and very pungent taste; but aromatic withal, and of a very agreeable smell. We have it both from the *East* and *West Indies*; but the oriental is much superior to the occidental

dental in its flavour, of a firmer substance does not beat out so much into three parts; it is an excellent carminative and stomachic, assists digestion, dispels flatulencies, and alleviates choleric pains almost instantaneously.

There are several receipts for this celebrated cordial; but the following is held to be the best.

Take of cinnamon one pound and a half, the rind of lemon-peels ten ounces, cloves one ounce and a quarter, leaves of balm of gilead one pound; bruise all these ingredients, and put them in eleven gallons of clean proof spirit, and one gallon of water; digest the whole for three hours, and distill off ten gallons with a brisk fire; and dulcify it with fine sugar.

Take of the lesser cardamoms, cloves, galangal, mace, nutmeg, and ginger one pound and three quarters, one part of citron-peel and cinnamon of each one pound and a half, of the leaves of balm of gilead one pound; bruise these ingredients, and put them in eleven gallons of spirit and one gallon of water: digest, and draw off, &c. as before.

This cordial has been long celebrated

noble stomachic, and therefore greatly called for.

Some, instead of all the ingredients enumerated in the above receipts, use only pimento; and this is the sort of aqua mirabilis which some sell so very cheap.

CHAP. XI.

Of Mint Water.

THE mint intended in this recipe is the common spearmint, an account of which has already been given, page 138.

Recipe for Ten Gallons of Mint Water.

Take of dry spearmint leaves fourteen pounds, proof spirit ten gallons and a half, water two gallons; draw off ten gallons by a gentle heat. You may dulcify it with sugar, if required.

Mint water is greatly recommended by the learned *Boerhaave* and *Hoffman*, against vomiting, nauseas, and the cholic.

C H A P. XII.

Of Peppermint Water.

THE peppermint has been already mentioned on page 137, to which the reader is referred.

Recipe for Ten Gallons of Peppermint Water.

Take of dry peppermint leaves ten pounds, proof spirit ten gallons and water one gallon; draw off ten gallons from the fire. You may either dulcify

Peppermint water is a noble stoppage against vomiting, nausea, cholera, griping pains in the bowels; in all these affections it greatly exceeds the common water.

C H A P. XIII.

Of Angelica Water.

THERE are two sorts of angelica, the single and the compound. I shall give the recipe for making both kinds; and with regard to the nature of angelica, it is sufficient to say that it is an excellent carminative

*Recipe for Ten Gallons of Single Angelica
Water.*

Take of the roots and seeds of angelica, cut and bruised, of each one pound and a half, proof spirit eleven gallons, water two gallons; draw off ten gallons, or till the faints begin to rise, with a gentle fire; and dulcify it, if required, with lump sugar.

This angelica water is a good carminative, and therefore good against all kinds of flatulent cholics, and griping of the bowels.

*Recipe for Ten Gallons of Compound Angelica
Water.*

Take of the roots and seeds of angelica, and of sweet fennel seeds of each one pound and a half; of the dried leaves of balm and sage of each one pound; slice the roots, and bruise the seeds and herbs, and add to them of cinnamon one ounce; of cloves, cubebs, galangals, and mace, of each three quarters of an ounce; of nutmegs, the lesser cardamom seed, pimento, and saffron, of each half an ounce: infuse all these in twelve gallons of clean proof spirit, and draw off ten gallons, with a pretty brisk fire. It may be dulcified or not at pleasure.

This

This is an excellent composition, a powerful carminative; and good in all flatulencies, and other griping pains in the bowels. It is also good in nauseas, and other disorders of the stomach.

It may not be amiss to observe, that in distilling this and several other compositions abounding with oily seeds, the operator should be careful not to let the faints or other goods as they would by the heat be rendered nauseous and unsightly. He should therefore be careful, towards the end of the operation, to catch some of the spirit that runs from the worm in a glass; and as ever he perceives it the least, he should move the receiver, and draw it off from themselves.

CHAP. XIV.

Of Orange Water.

THIS water is made in the same manner as the former, from the peels of oranges, as citron (see vi.) is from the peels of citrons.

Recipe for Ten Gallons of Orange-water.

Take of the yellow part of fresh orange-peels five pounds, clean proof spirit ten gallons and a half, water two gallons; draw off ten gallons with a gentle fire.

This is a good stomachic, and may also be used for making bitter tinctures, as that called *Stoughton's drops*.

CHAP. XV.

Of Plague Water.

THERE are several recipes for making plague water; but the following are much the best:

Recipe for Ten Gallons of Plague-water.

Take of the roots of masterwort and butter-burr, of each one pound and a quarter; of *Virginia* snake-root and zedoary, of each ten ounces; angelica-seeds and bay-seeds, of each fourteen ounces; and of the leaves of scordium, one pound and a half. Cut or bruise these ingredients, and put them into the still, with twelve gallons of
1 clean

clean proof spirit, and two gallons; digest the whole for twenty days; draw off ten gallons. Or,

Take of the leaves ofcelandine, sage, Roman wormwood, draught balm, scordium, the lesser centaury, benedictus, betony, and mint, of each handful; of dried angelica-root, gentian, of each ten ounces, and snake-root five ounces; digest twelve hours, in twelve gallons of clean proof spirit, and two gallons of water; and draw off ten gallons as before. Or,

Take of rue, rosemary, balm of benedictus, scordium, marigold-flowers, goat's-rue, and mint, of each handful; roots of masterwort, angelica, piony, of each one pound and half; of viper-grass, ten ounces; digest in twelve gallons of spirit, &c. as before. Or,

Take of the roots of masterwort, snake-root, of each seven ounces; of walnuts bruised, eighty; venice-treacle, of each three ounces; of drachms; of the roots of rue and

each three ounces; horehound six ounces; saffron six drachms; proof spirit twelve gallons; digest, &c. as before. Or,

Take dragons, rosemary, wormwood, sage, scordium, mugwort, scabious, balm, carduus, angelica, marigold-flowers, centaury, betony, pimpernel, celandine, rue, and agrimony, of each three pounds; of the roots of gentian, zedoary, liquorice, and elecampane, of each twelve ounces; twelve gallons of spirits; digest, &c. as before. Or,

Take of green walnuts, five pounds; of angelica-root, two pounds; of the leaves of angelica, rue, sage, and scordium, of each ten handfuls; of nutmegs, long-pepper, ginger, camphire, and gentian root, of each five ounces; of snake-root, contrayerva, elecampane, zedoary, and viper's flesh, of each thirteen ounces; venice treacle and mithridate, of each thirteen ounces; white-wine vinegar, seven pounds; proof spirit, twelve gallons; digest, &c. as before.

You may either dulcify your plague-water or not, as you see occasion.

All the above receipts for making plague-
I 2 water

water are in use ; but the first is elegant, containing nothing but what is intended for the intention, and at the same time give its virtues by distillation ; what is said of any of the rest, several of them adding no virtue at all to the water. The kind are the celandine, carduus, tian, walnuts, &c.

Plague-water is a noble alexipharmonic, high carminative cordial in malignant fevers, of great use in lowness of spirits and

CH A P. XVI.

Of Dr. Stephen's Water

THIS water has its name from a famous physician of great learning and

Recipe for Ten Gallons of Dr. Stephen's Water

Take of cinnamon, ginger, galbanum, nutmegs, grains of paradise, the seeds of sweet fennel, and caraway, of each pound ; of the leaves of thyme, mother of sage, pennyroyal, rosemary, flowers of camomile, origanum, and lavender, of each handful ; of clean proof spirit, ten

water, two gallons; digest all twenty-four hours, and then draw off ten gallons, or till the faints begin to rise. Dulcify with fine sugar to your palate.

This is a noble cephalic cordial and carminative; and also, in some degrees, an hysteric; good in all cholic pains in the stomach and bowels, and diseases of the nerves.

CHAP. XVII.

Of Surfeit Water.

THERE are two kinds of surfeit-water, one made by distillation, and the other by infusion; the former is generally called white *Surfeit Water*, and the latter red *Surfeit Water*.

Recipe for Ten Gallons of white Surfeit Water.

Take marigold-flowers, mint, centaury, rosemary, scordium, mugwort, carduus, rue, St. John's wort, balm, and dragons, of each seven handfuls; of the roots of piony, viper-grass, butter-burr, and angelica, of each one pound and a half; of galangal, calamus aromaticus, and of the seeds of angelica and caraway, of each four

I 3

ounces;

ounces; of the flowers of red poppies, eleven gallons; proof spirit, twelve gallons; digest for twenty-four hours; draw off ten gallons, or till the sediment rises; and dulcify with fine sugar.

This is a good cordial, but would be worse, if the carduus, mugwort, and John's wort, were omitted, as little virtues can be obtained by distillation; however, a good alexipharmic, carminative, and stomachic; and therefore good in all flatulencies in the stomach and bowels, in nausea and vomiting, from whence it had its name.

Recipe for making ten Gallons of red Spirit

Take of the flowers of red poppies, eleven gallons of clean proof spirit, digest them with a gentle heat for three days; till the spirit has extracted all the colour from the flowers: then press out the liquor from the flowers, and add to the tincture of the seed of fennel and coriander, and liquorice-root, each ten ounces; of cardamoms and nutmeg, each four ounces; of raisins stoned, five ounces; of cinnamon, five ounces; of nutmeg,

and ginger, of each three ounces; of cloves, two drachms; of juniper-berries, three ounces; let the whole be digested three days, then press out the liquor, adding to it a gallon of rose-water; and then strain or filter the whole through a flannel bag.

This water is much superior to the preceding, as all the ingredients will give their virtues to the tincture, though they will not rise in distillation. It is a noble alexipharmic, it strengthens the stomach, and greatly assists digestion; it is also an excellent carminative, and good against the cholic and gripes: its cordial virtues renders it serviceable in all tremblings of the nerves, and depressions of the spirits.

CHAP. XVIII.

Of Wormwood Water.

THERE are two sorts of wormwood water, distinguished by the epithets of *greater* and *lesser*.

Recipe for making Ten Gallons of the lesser Composition of Wormwood Water.

Take of the leaves of dried wormwood, five
 I 4 pounds;

pounds; of the lesser cardamom
 ounces; of coriander-seeds, or
 clean proof spirit, eleven gallons
 gallon; draw off ten gallons, or
 begin to rise, with a gentle fire
 dulcified with sugar, or not, at p

This is a good stomachic and
 and on that account often called

*Recipe for Ten Gallons of the great
 of Wormwood Water*

Take of the common and sea
 dried, of each ten pounds; of sa
 balm, dried, of each twenty ha
 roots of galangal, ginger, calam
 and elecampane, of the seeds o
 and coriander, of each three oun
 mon, cloves, and nutmegs, the les
 and cubebs, of each two oun
 bruise the ingredients as they r
 them twenty-four hours, in elev
 fine proof spirit, and two gallons
 draw off ten gallons, or till the
 rise, with a pretty brisk fire.

This is an excellent composition

all diseases of the stomach, arising either from wind or a bad digestion. It is greatly in use in some parts of *England*, but comes too dear for the common sort of people; on which account a cordial water is often sold under the title of *the greater composition of wormwood water*, drawn from the leaves of wormwood, orange and lemon peel, ealamus aromaticus, pimento, and the seeds of anise and caraway; which being all cheap ingredients, the composition may be sold at a moderate price. A water drawn in this manner is a good carminative; but far inferior to that made by the above recipe.

CHAP. XIX.

Of Antiscorbutic Water.

THE scurvy being a disease very common in *England*, this antiscorbutic water will be of great use.

Recipe for making Ten Gallons of Antiscorbutic Water.

Take of the leaves of water-cresses, garden and sea scurvy-grass, and brook-lime, of each

15

twenty

twenty handfuls; of pine tops, germ
hound, and the lesser centaury, of
handfuls; of the roots of bryony
pointed dock, of each six pounds
seed, one pound and a half. Dige
in ten gallons of proof spirit, and tw
water, and draw off by a gentle fir

This is a good water for the p
pressed in the title, viz. against s
orders. It is also good in tremblin
orders of the nerves.

CHAP. XX.

Of Compound Horse-radish

THERE are several methods of
compound water; but the three fo
cipes are the best that has hitherto

Recipe for making Ten Gallons of Horse-radish Water.

Take of the leaves of fresh gar
grass, sixteen pounds; of fresh
root, and the yellow part of Seville c

of each eight pounds; of nutmegs, two pounds. Cut and bruise these ingredients, and digest them twenty-four hours in ten gallons of proof spirit and two gallons of water; after which draw off ten gallons with a gentle fire. Or,

Take of the fresh roots of horse-radish, nine pounds; of the leaves of water-cresses and of garden scurvy-grass, of each six pounds; of the outward, or yellow peel of oranges and lemons, of each nine ounces; of Winter's bark twelve ounces; of nutmegs, three ounces. Cut, bruise, and digest the ingredients in ten gallons of proofspirit, and two gallons of water, and draw off ten gallons as before. . Or,

Take of the leaves of garden and sea scurvy-grass, fresh gathered in the spring, of each seven pounds; brook-lime, water-cresses, and horse-radish root, of each ten pounds; of Winter's bark and nutmegs, of each ten ounces; of the outer peel of lemons, one pound; of arum root, fresh gathered, two pounds; proof spirits ten gallons, water two gallons. Bruise and slice the ingredients; digest the whole, and draw off ten gallons as before.

Either of the above recipes will produce an
I 6 excellent

excellent water, against all obstructions of the kidneys and other viscera. It is of great service in the jaundice, cachexies, and in all scorbutic cases, it is a powerful medicine; as it opens the minute pores, promotes transpiration, and cleanses the other small glands, which are filled with impurities, and drives the particles to the detriment of their

CHAP. XXI.

Of Treacle Water.

THIS water is made in a very different manner, by different persons; but the following recipes are the best for this purpose.

Recipe for making Ten Gallons of

Take of the fresh and green hulse four pounds and a half; of the rye burr, three pounds; of angelica wort, of each one pound and a half; of the mary, twelve ounces; of the leaves of scordium, of each eighteen ounces; of treacle, three pounds; digest them for seven days in twelve gallons of proof spirit, and twelve gallons of water; after which dr

lons; to which add a gallon and a half of distilled vinegar. Or,

Take of the rind of green walnuts, five pounds; of rue, four pounds; of carduus, marigold, and balm, of each three pounds; of fresh gathered butter-burr roots, two pounds and a half; of burdock root, one pound and a half; of green scordium, twelve handfuls; of Venice treacle and mithridate, of each two pounds and a half; proof spirit, twelve gallons; and water, two gallons. Digest and draw off ten gallons, as before; to which add a gallon and a half of distilled vinegar.

Some instead of distilled vinegar unadvisedly add a proportional quantity of spirit of vitriol, or other mineral acid, to their treacle water; but this practice is very pernicious, and entirely alters the nature of the medicine. Vinegar is an acid made by a double fermentation, and therefore of a different nature from the acid juices of vegetables, whether oranges, lemons, citrons, limes, crabs, barbaries, &c. as also from those of minerals, whether vitriol, sulphur, &c. It is indeed, like them, acid on the tongue; but then it liquifies the blood, is anti-pestilential, suddenly cures drunkenness, surfeits, the plague, and
does

does a thousand things both as a medicine, which they will not. The admirable and sprightly alexipharmic, to which, the vinegar added tributes, and therefore good in fever, pox, measles, and other pestilential

CHAP. XXII.

Compound Camomile-flower

THE camomile flowers generally of the double sort, consisting wholly of flower leaves, without any appearance of stamens, or pistil, or the other parts of the fructification, which in the single flowers appears in the middle in form of yellow tubercles. But though the double flowers are commonly used, they are not the best which ought to be chosen. The single, or those which consist of only a single flower leaves, or petals, in form of rays, surrounding a clustre of yellow threads, or stamens, have more virtue. It is indeed in these, that their apices, that great part of the flower resides, and these are wanted in double flowers.

*Recipe for making Ten Gallons of Compound
Camomile-flower Water.*

Take of dried camomile flowers, five pounds ; of the outer peel of oranges, ten ounces ; of the leaves of common wormwood, and pennyroyal, of each twenty handfuls ; of the seeds of anise, cummin, sweet fennel, the berries of bay and juniper, of each five ounces. Digest these ingredients two days in ten gallons of proof spirit, and three gallons of water, and draw off ten gallons with a gentle fire.

This is a very good carminative and stomachic ; good in all cholics and other disorders of the bowels from wind. It also provokes the appetite, and promotes a good digestion. Its virtues as a stomachic will not be less when made from the double flowers ; but if intended as a carminative, it should be made with the single flowers.

CHAP. XXIII.

Imperial Water.

THIS cordial water has its name from the great opinion conceived of it by its first inventors ;

ors; and though their opinion is justly founded, yet it is not at present in use as formerly.

Recipe for making Ten Gallons of

Take of the dried peels of citrons, of nutmegs, cloves, and cinnamon, pound; of the roots of cypress, *Fl. calamus aromaticus*, of each eight doary, galangal, and ginger, of each of the tops of lavender and rose sixteen handfuls; of the leaves of mint, and thyme, of each eight handfuls of white and damask rose twelve handfuls. Digest the whole in ten gallons of proof spirit, and damask-rose water; after which, strain off the liquor, and reduce it to ten gallons.

All the ingredients in composition are for one intention, and as such will be extracted by distillation; circumstances may be said of many other compounds, that it is a very good cephalic, and of great use in nervous cases. It is also a very pleasant, especially if dulcified with fine sugar, and is useful upon any sudden sickness of the

CHAP. XXIV.

Of Compound Piony Water.

THE piony, from whence this compound water takes its name, is a plant divided into male and female; but the former is the sort intended to be used in this composition. The male and female plants are distinguished both by their roots and leaves. The male has a shining blackish leaf, from which the female differs by being lighter coloured. The root of the male kind is more bulbous, and shorter branched than that of the female, whose shoots are much longer and thinner.

Recipe for making Ten Gallons of Compound Piony Water.

Take of the roots of male piony, twelve ounces; of those of wild valerian, nine ounces; of those of white dittany, six ounces; of piony seed, four ounces and a half; of the fresh flowers of lily of the valley, one pound and a half; of those of lavender, Arabian stæchas, and rosemary, of each nine ounces; of the tops of betony, marjoram, rue, and sage, of each six ounces; slice and bruise the ingredients, and digest

gest them four days in ten gallons of spirit, and two gallons of water; after draw off ten gallons. Or,

Take of the flowers of lilies fresh gathered, and male piony root each ten pounds; of cinnamon and cubeb each eight ounces; of rosemary and lavender of each two handfuls; of damask rose two gallons. Digest these four days in ten gallons of proof spirit, and draw off ten gallons before.

This is an excellent cordial, and is succeeded by nothing in all nervous disorders in children and grown persons.

CHAP. XXV.

Of Nutmeg Water.

THE nutmeg is a kernel of a tree unlike the peach, and is separated from its investient coat the mace, before it comes to us; except when the whole fruit is in preserve, by way of sweetmeat for delicacy. There are two kinds of nutmeg called by authors the male, and the female. The female is the kind in

and is of the shape of an olive ; the male is long and cylindric, and has less of the fine aromatic flavour than the other, so that it is much less esteemed, and people who trade largely in nutmegs will seldom buy it. Besides this oblong kind of nutmeg we sometimes meet with others of very irregular figures ; but these are mere *Lusus Naturæ*, being produced by the same tree. The long or male nutmeg, as we term it, is, by the *Dutch*, called the wild nutmeg. It is always distinguishable from the others, as well by its want of fragrancy, as by its shape ; it is very subject to be worm-eaten, and is strictly forbid by the *Dutch* to be packed among the other, because it will be the means of their being worm-eaten also, by the insects getting from it into them, and breeding in all parts of the parcel. The largest, heaviest, and most unctuous of the nutmegs are to be chosen, such as are of the shape of an olive, and of the most fragrant smell.

Recipe for making Ten Gallons of Nutmeg Water.

Take of nutmegs, bruised, one pound ; proof spirit, ten gallons ; water, two gallons. Digest them two days, and then draw off ten gallons with a brisk fire. You may either dulcify it or not, as occasion offers. Or,

Take

Take of nutmegs, bruised, one
peel, two ounces; spirit, ten gal
gallons. Digest, and distill as b

This is an excellent cephalic
ter; agreeable to the palate, com
stomach, and grateful to the ner
fully discusses wind and vapours
mach and bowels, and is therefo
vice in the cholic and griping o

CHAP. XXVI

Of Compound Bryony

THE white bryony-root, from
water takes its name, is one of t
we are acquainted with. It is
shape, and is frequently met wi
ness of a man's arm, sometimes o
times that bigness: Its texture is
and spongy; considerably heav
that the thickest pieces are eas
with one stroke of a knife; it is
is externally of a brownish or y
colour, and of a pure white wi
disagreeable smell, and an acrid
taste,

*Recipe for Ten Gallons of Compound Bryony
Water.*

Take of the roots of bryony, four pounds; wild valerian root, one pound; of pennyroyal and rue, of each two pounds; of the flowers of fever-few, and tops of savin, of each four ounces; of the rind of fresh orange peel, and lovage-seeds, of each half a pound; cut or bruise these ingredients, and infuse them in eleven gallons of proof spirit, and two gallons of water, and draw off ten gallons with a gentle heat. Or,

Take of fresh bryony root, four pounds; of the leaves of rue and mugwort, of each four pounds; of the tops of savin, six handfuls; of fever-few, catmint, and pennyroyal, of each four handfuls; of orange-peel, eight ounces; of myrrh, four ounces; of *Russia* castor, two ounces; proof spirit, eleven gallons; water, two gallons. Digest and distill as before.

This composition is very unpalatable, but excellently adapted to the intention of an hysteric, in which cases it is used with success. It is very forcing upon the uterus, and therefore given to promote delivery, and forward the proper cleansings

cleansings afterwards; as also to obstructions, and in abundance of complaints. It is also good again in children, and of service in all complaints of either sex.

It may not be amiss to observe that the oily parts of the ingredients will of themselves make the water foul and milky. If, therefore, one desires to have it fine and transparent, the receiver must be removed as soon as the worm appears the least turbid, and be long before the faints begin to return, however, is not the worse for it with regard to its medicinal virtue. When the liquor is milky, throw in a little alum to fine it; but this should not be done because it spoils the medicine.

CH A P. XXVII.

*Of compound Balm Water, common
de Carmes.*

This has its name (*Eau de Carmes*) from the Carmelite friars, who were the inventors. The great profit accruing to these friars from the sale of this cordial, induced t

the method of making it a secret ; but, notwithstanding all their care, the secret has at last been discovered ; and the following is the method by which they prepare it :

Recipe for Two Gallons of Eau de Carmes.

Take of the fresh leaves of balm, four pounds ; of the yellow peel or rind of lemons, two pounds ; of nutmegs and coriander-seeds, of each one pound : of cloves, cinnamon, and angelica root, of each half a pound. Pound the leaves, bruise the other ingredients, and put them with two gallons of fine proof spirit into a large glass alembic (the figure of which, with its head, is represented on the plate, *Fig. 7.*) stop the mouth, and place it in a bath heat to digest two or three days. Then open the mouth of the alembic, and add a gallon of balm water, and shake the whole well together. After this, place the alembic in *Balneum Mariæ*, and distill till the ingredients are almost dry ; and preserve the water thus obtained in bottles well stopped.

This water has been long famous both at *London* and *Paris*, and carried from thence to most part of *Europe*. It is a very elegant cordial, and very extraordinary virtues are attributed to it ;

it; for it is esteemed very efficacious in the lowness of spirits, but even in apoplexy it is greatly commended in cases of indigestion of the stomach.

CHAP. XXVIII

Of Ladies Water.

THIS water has its name from its being much fitter for the closet than for use in a shop; but as it is an excellent medicine, I could not omit giving it a place here.

Recipe for One Quart of Ladies Water.

Take of sugar-candy, one pound; white wine, six ounces; rose water, four ounces; mix them into a syrup, and mix with it rose water (described Chap. xxx.) one pint; bergamot and musk, of each eight grains; saffron, fifteen grains; yellow wax, one drachm. Digest the whole three days in a vessel close stopped, and decant the clear.

This is an extraordinary cordial, and its fumes are not offensive. It is to be drunk alone, and therefore should be diluted with water, or some other liquid.

CHAP. XXIX.

Of Cephalic Water.

THIS water has its name from its use, being one of the best cephalic waters known.

Recipe for Ten Gallons of Cephalic Water.

Take of male piony-root, twelve ounces ; of angelica and valerian, of each four ounces and a half ; of the leaves of rosemary, marjoram, and balm, of the flowers of lavender, betony, piony, marigolds, sage, rosemary, lilies of the valley, and of the lime-tree, of each three handfuls ; of stæchas, or *French* lavender, four ounces and a half ; of red-roses and cowslips, of each six handfuls ; of rhodium wood and yellow saunders, of each two ounces and a half ; of nutmegs, four ounces and a half ; of galangals, an ounce and a half ; of cardamus and cubebs, of each one ounce. Bruise these ingredients, and digest them ten days in eleven gallons of proof spirit, and two gallons of water ; after which add three pounds of cinnamon, and digest two days more ; and then draw off ten gallons, with a pretty brisk fire, and dulcify it to your palate with fine sugar.

This is an excellent cordial, of faintings or sinking of the spirits, any sudden nauseas or sickness a

CHAP. XXX

Of Heavenly Water; or Aqua

THIS water has its name from the opinion its inventors had of it; but is not so much called for as former

Recipe for Ten Gallons of Heav

Take of cinnamon, mace, and each three ounces; ginger, one half; cloves, galangal, nutmegs, of each one ounce; zedoars and a half; fennel-seeds, one seeds of anise, wild carrot, and half an ounce; roots of angelica, lamus aromaticus, leaves of thyme, pennyroyal, mint, mother of thyme, of each an ounce; flowers of rosemary, and stæchas, of each citron-peel, an ounce; bruise all the ingredients, and digest them three days in ten gallons of proof spirit, and for water; after which draw off ten

a pretty brisk fire; and dulcify the goods with fine sugar, adding ambergris and musk, of each three scruples.

The perfumes ordered to be added with the sugar rendering the medicine offensive to some people, they may be omitted at pleasure. It is esteemed very efficacious in all nervous complaints, particularly palsies, loss of memory, and the like. In all decays of age, and languishing constitutions, it is exceeded by nothing in suddenly raising the spirits, and warming the blood.

CHAP. XXXI.

Of Spirituous Pennyroyal Water.

THE plant from whence this water has its name has been already described, Chap. xiii. Part II.

Recipe for Ten Gallons of Spirituous Pennyroyal Water.

Take of the leaves of pennyroyal, dried, fifteen pounds; proof spirit, ten gallons; water, two gallons; draw off ten gallons, with a gentle fire.

This is a good carminative, of use in cholics

and gripings of the bowels; also in the jaundice; it is of known efficacy in the menses and other disorders of sex.

CHAP. XXXII

Of Compound Parsley Water.

THE plant from whence this is derived, is the common parsley or an herb too well known to need

Recipe for Ten Gallons of Compound Parsley Water.

Take of parsley-root one pound, fresh horse-radish root, and juniper each fifteen ounces; the tops of St. biting arsmart, and elder-flower each fifteen ounces; the seeds of wild carrot and parsley, of each seven ounces. Slice and bruise the ingredients. and steep for four days in eleven gallons of spirit of wine and ten gallons of water; after which, draw

This is a very good diuretic, for removing sand and other matter, which causes gravel and stones. It is also good

arising from a stone in the bladder, and drains off all ill humours by urine.

CHAP. XXXIII.

Of Carminative Water.

THIS water has its name from its use, being an excellent carminative.

Recipe for Ten Gallons of Carminative Water.

Take of fresh camomile-flowers, four pounds; dill-seed, two pounds and a half; leaves of balm, origany, and thyme, of each one pound; seeds of anise and fennel, of each six ounces: cummin-seed, four ounces; peels of oranges and citrons, of each eight ounces; juniper and bay-berries, of each six ounces; cinnamon, eight ounces; mace, four ounces. Digest these ingredients, bruised, in eleven gallons of proof spirit, and two gallons of water; after which draw off ten gallons, and duleify it with fine sugar.

This is an admirable carminative, and therefore good in all cholicky pains and gripings of the bowels; and to remove sickness and nausea from the stomach.

CHAP. XXXIV.

Of Gout Water.

THIS water has also its name being of great service in that distemper.

Recipe for Ten Gallons of Gout Water.

Take of the flowers of camomile, pennyroyal, lavender, marjoram, sage, and ground-pine, of each equal parts; myrrh, four ounces; cloves and cinnamon, each one ounce; roots of piony, pellitory of *Spain*, and cypress of each one ounce; the lesser cardamoms and nutmegs, each half an ounce; bruise these ingredients, and steep them for four days in eleven gallons of proof spirit, and two gallons of water: then draw off, and dulcify with fine sugar.

This is a very good water in all manner of Gout, and a continued moderate use of it will strengthen and fortify the fibres, so as to prevent the discharge of such juices upon the joints, and thereby prevent the Gout, and the rheumatic pains and swellings. It is also

use in palsies, epilepsies, and loss of memory ; particularly when these distempers proceed from old age, or when the principal springs of life begin to decay.

CHAP. XXXV.

Of Anhalt Water.

THIS water is supposed to have been invented by a celebrated physician of *Anhalt*, a province of the Circle of Upper *Saxony*.

Recipe for making Ten Gallons of Anhalt Water.

Take of the best turpentine, a pound and a half ; olibanum, three ounces ; aloes wood powdered, one ounce ; grains of mastic, cloves, July-flowers, or rosemary flowers, nutmegs and cinnamon, of each two ounces and a half ; saffron, one ounce : powder the whole, and digest them six days in eleven gallons of spirit of wine ; adding two scruples of musk, tied up in a rag ; and draw off in *Balneum Mariæ* till it begins to run foul.

This water is a high aromatic cordial, invigorates the intestines, and thereby promotes diges-

tion, and dispels flatulencies. It is
repute as a sovereign remedy for
pains arising from colds ; as also in
lepsies, apoplexies, and lethargies,
affected being well rubbed with it.

CHAP. XXXVI.

Of Vulnerary Water ; or, Eau d'

THIS vulnerary water is great
abroad, and if properly tried, there
of its obtaining the same reputation

Recipe for Five Gallons of Vulnery

'Take of the leaves, flowers, and
frey, leaves of mugwort, sage, and b
eight handfuls ; leaves of betony, sa
eye daisy, the greater figwort, plant
ny, vervain, wormwood and fennel,
handfuls ; St. John's wort, birth-v
Paul's-betony, the lesser centaury,
bacco, mouse-ear, mint, and hyss
two handfuls ; cut them, bruise th
mortar, and pour on them three gal
wine, and two gallons and a half of
digest the whole six days with a ge

a vessel close stopped ; after which distill off, with a gentle fire, about five gallons, or till it begins to run milky from the worm.

This water is of excellent service in contusions, tumours attending dislocations, fractures and mortification, the part affected being bathed with it. Some also use it to deterge foul ulcers, and incarn wounds, from whence it was called vulnerary water.

CHAP. XXXVII.

Of Cedrat Water.

THE fruit called cedrat by the *French* is a species of the citron, called by botanists *citratum Florentinum fructu mucronato & recurvo, cortice verrucoso odoratissimo*, Florentine citron, with a pointed fruit, which is recurved, and a warted sweet smelling rind. This fruit is in so great esteem, that they have been sold at *Florence* for two shillings each, and are often sent as presents to the courts of princes. It is only found in perfection in the plains between *Pisa* and *Leghorne* ; and though the trees which produce this fruit have been transplanted into other parts of *Italy*, yet they are found to lose much of that excellent taste with which they abound in those parts.

Recipe for a Gallon of Cedrat

Take the yellow rinds of five cedrats, and two quarts of fine proof spirit, and two quarts of water; digest the whole twenty-four hours in a bath of *Balneum Mariæ*, and draw off one gallon, or more, if stopped; after which draw off one gallon, or more, of *Balneum Mariæ*, and dulcify with white sugar.

This is esteemed the finest cordial, but as it is very difficult to procure here, I shall give the method of making a celebrated cordial, with the essence of cedrat, which is often imported from *Italy*.

Recipe for a Gallon of Cedrat Water, and the Essence of the Fruit.

Take of the finest loaf-sugar reduced to powder, a quarter of a pound; put it in a mortar, with one hundred and twenty grains of the essence of cedrat; rub them together with a glass pestle, put them into a glass bottle, with a gallon of fine proof spirits, and a quart of water. Place the alembic in a bath of *Balneum Mariæ*, and draw off one gallon, or more, when it begins to rise; and dulcify with fine white sugar.

You may make this water without

by mixing the essence with the sugar, as before directed, and dissolving it in the spirit and water directed as above. But the water will be foul and milky, and therefore you must filtrate it through paper, which will restore its brightness and transparency.

But whatever method is used, you must be very careful that the spirit be entirely freed from its essential oil; and therefore if your spirit be not very cleanly rectified, it will be adviseable to use *French* brandy, lest the fine flavour so highly esteemed in this cordial be destroyed by the spirit.

CHAP. XXXVIII.

Of Bergamot Water.

THE bergamot is a species of the citron, produced at first casually by an *Italian's* grafting a citron on the stock of a bergamot pear-tree, whence the fruit produced by this union participated both of the citron tree and pear tree. The inventor is said to have kept the discovery a long time a secret, and enriched himself by it.

The bergamot is a very fine fruit both in taste
 и 6 and

and smell; and its essence, or oil, is highly esteemed.

Recipe for a Gallon of Bergamot

Take the outer rind of three bergamot oranges, and three gallons of proof spirit, and two quarts of water. Draw off one gallon of it in *Balneo*, and dulcify it with fine sugar.

If you make your bergamot water an essence, or essential oil, observe the directions as given in the preceding making cedrat water. One hundred drops of the essence will be sufficient for a gallon of spirit; and so in proportion for a larger or smaller quantity.

C H A P. XXXIX.

Of Orange Cordial Water; or, Eau de Orange

THE orange, called by the *French* *orange*, is called by botanists *aurantium macrocarpum*, *rucoso cortice*, the large worted orange.

It is a large and beautiful fruit, and is highly esteemed for the fragrancy of its es-

common in diverse parts of *Italy, Spain, and Provence in France.*

Recipe for making a Gallon of Orange Cordial.

Take of the outer or yellow part of the rinds of fourteen bigarades; half an ounce of nutmegs; a quarter of an ounce of mace, a gallon of fine proof spirit, and two quarts of water. Digest all these together two days, in a close vessel, after which draw off a gallon with a gentle fire, and dulcify with fine sugar.

This cordial is greatly esteemed abroad, and would be the same here if sufficiently known.

If the orange peels are not easily procured, one hundred and forty drops of the essence may be used in their stead, and the water will be nearly equal to that made from the peels.

CHAP. XI.

Of Jasmine Water.

THERE are several species of jasmine, but that sort intended here is what the gardeners call *Spanish white, or Catalonian jasmine.* This

is

is one of the most beautiful of all jasmine; the flowers much larger than the others, of a red colour on the extremely fragrant. But if the species cannot be procured, those of the common sort may be used; but the effect may be considerably augmented.

Recipe for a Gallon of Jasmine

Take of *Spanish* jasmine flowers six ounces; essence of Florentine citron, eight drops; fine proof spirit, two quarts. Digest two days in a vessel, after which draw off one gallon, and dulcify with fine loaf-sugar.

This is a most excellent cordial, and is more known here than it is elsewhere.

CHAP. XLI.

Of the Cordial Water of Monaca

THIS water has its name from the place where it was first made, and which was brought from thence is still in great

*Recipe for a Gallon of the Cordial Water of
Montpelier.*

Take of the yellow rinds of two bergamots, or fifty drops of the essence of that fruit; cloves and mace, of each half an ounce; proof spirit, a gallon; water, one quart: digest two days in a close vessel, draw off a gallon, and dulcify with fine sugar.

CHAP. XLII.

Of Father Andrew's Water.

THIS water has its name from its inventor, and is greatly esteemed in *France*.

Recipe for a Gallon of Father Andrew's Water.

Take of white lily flowers, eight handfuls; orange flowers, four ounces; rose water, a quart; proof spirit, a gallon; water, a quart; draw off a gallon in *Balneum Mariæ*, and dulcify with fine sugar.

CHAP. XLIII.

Of the Water of Father I.

THIS water has also its name from its inventor, a jesuit of *Paris*.

*Recipe for a Gallon of the Water of
Barnabas.*

Take of the roots of angelica, of cinnamon and orris root, of each an ounce; bruise these ingredients and put them into an alembic, with proof spirit and two quarts of water. Digest a gallon with a pretty brisk fire.

CHAP. XLIV.

Of the Water of the Four Fruits.

THIS water has its name from the four fruits in its composition, namely, the verjuice of the citron, the bergamot, the lemon, and the *Portugal* orange.

*Recipe for a Gallon of the Water of the
Fruits.*

Take of the essence of cedrat, five

the essence of bergamot, thirty-six drops ; of the essence of citron, sixty drops ; and of the essence of *Portugal* orange, sixty-four drops ; fine proof spirit, one gallon ; water, two quarts : draw off with a pretty brisk fire till the faints begin to rise, and dulcify with fine sugar.

This is a very pleasant and odoriferous cordial, and in great esteem in *France*.

CHAP. XLV.

Of the Water of the Four Spices.

THIS water also derives its name from the four spices from whence it is drawn, viz. cloves, mace, nutmegs, and cinnamon.

Recipe for a Gallon of the Water of the Four Spices.

Take of cinnamon, two ounces : nutmegs and cloves, of each three drachms ; mace, six drachms ; bruise the spices in a mortar, and add proof spirit a gallon, and water two quarts. Digest twenty-four hours in a close vessel, and distill with a brisk fire till the faints begin to rise : and dulcify with fine sugar.

This

. This is an excellent stomachic, g
pressions of the spirits, and paralyt

CHAP. XLVI.

Of the Water of the Four

THIS water has its name from t
from whence it is drawn, viz. the
fennel, coriander, angelica, and a

Recipe for Ten Gallons of the W Four Seeds.

Take of sweet fennel-seed, seven
riander-seed, nine ounces ; of the
lica and anise, of each three ounce
these in a mortar, and put them into
ten gallons and a half of proof sp
gallons of water : draw off with a
the faints begin to rise, and dulc
sugar.

This water is a very good carmi
in cholics, nauseas of the stomach,
of the bowels.

CHAP. XLVI.

Of the Divine Water.

THIS is one of those waters whose names have rendered them famous. The basis of this water is orange-flowers, the other ingredients being added to diversify the flavour, and render it more agreeable.

Recipe for a Gallon of Divine Water.

Take of orange-flowers, fresh gathered, two pounds; coriander-seed, three ounces; nutmegs, half an ounce; bruise the nutmegs and coriander-seed, and put them together with the orange-flowers, into an alembic with a gallon of proof spirit, and two quarts of water: draw off the liquor with a gentle fire, till the faints begin to rise, and dulcify with fine sugar.

This is a very pleasant cordial, both with regard to its smell and taste: and on that account, in great esteem abroad.

CHAP. XLVIII.

Of Roman Water.

THIS water has its name from its being first at *Rome* : and from whence grapes are still exported to different parts.

Recipe for a Gallon of Roman

Take the outer or yellow peels of two drachms of mace, bruised ; a gallon of spirit and two quarts of water : distill on gentle fire till the faints begin to rise, rectify with fine sugar.

This water is generally of a red colour, the former of which may be improved by infusing in it a few grains of camphire, the red parts of clove July-flower &c. Afterward, by adding to the above a little more of spirit. When the colour is extracted, run it through the filtrating-bag, and it will be bright and clear.

CHAP. XLIX.

Of Barbadoes Water.

THERE is a great variety of waters called by this name, made by foreign distillers; but the following recipes will be sufficient to shew the distiller the method of making them, and how to vary the flavour of his waters, so as to adapt them to the taste of his customers.

Recipe for a Gallon of rectified Barbadoes Water.

Take the outer rind of eight large Florentine citrons; half an ounce of cinnamon bruised; and a gallon of rectified spirit. Distill to a dryness in *Balneum Mariæ*. Then dissolve two pounds of sugar in a quart of water, and mix it with the distilled liquor, and run it through the filtrating bag, which will render it bright and fine.

Recipe for making a Gallon of Amber coloured Barbadoes Water.

Take of the yellow rind of six bergamots, half an ounce of cinnamon, and two drachms of cloves. Bruise the spices, and digest the whole
six

six days in a gallon of rectified spirit, add a drachm of saffron, and let it stand six days longer in digestion; dissolve of fine sugar in a quart of water, mix the tincture, and run it through the filter.

After the same manner may be made does waters of different kinds, by adding lemon or orange-peels, instead of those of the gamot; or, by varying the spices.

CHAP. L.

Of Ros Solis.

The ros solis or sun-dew, from which the cordial water has its name, is a small plant with a fibrous root, from whence grow several round hollowish leaves, on foot-stems about an inch long, covered and fringed with white hairs, which give a red cast to the flowers. It grows in champaign and mossy ground, a pale red moss, and flowers in May.

Recipe for Ten Gallons of Ros Solis.

Take of ros solis picked clean, cinnamon, cloves, and nutmegs,

ounces and a half; marigold-flowers one pound; caraway-seeds ten ounces; proof spirit ten gallons, and of water three gallons. Distill with a pretty brisk fire, till the faints begin to rise. Then take of liquorice root sliced half a pound; raisins stoned two pounds: red saunders half a pound; digest these three days in two quarts of water, and strain out the clear liquor, in which dissolve three-pounds of fine sugar, and mix it with the spirit drawn by distillation.

Recipe for making Ten Gallons of Ros Solis by Digestion.

Take of ros solis clean picked three pounds; nutmegs, mace, cloves, and cinnamon, the seeds of caraway and coriander, of each three ounces; ginger, the lesser cardamom, zedoary, and calamus aromaticus, of each one ounce; cubebs and yellow saunders of each half an ounce; red saunders three ounces; red rose leaves dried three handfuls; proof spirit ten gallons; digest the whole six days in a vessel close stopped, and then strain off the clear liquor, and dulcify it with fine sugar. Or,

Take of ros solis picked three pounds; cinnamon

mon and nutmegs, caraway, seeds, of each three ounces; clove ginger, of each one ounce and bebs, cardamoms, zedoary, and ceticus, of each half an ounce: re three ounces; liquorice root sliced, raisins stoned, one pound and a half, and saffron, of each three drachms: whole eight days in ten gallons of strain off, and dulcify as before.

Recipe for Ten Gallons of Turin

Take of damask roses, orange of the valley, and jasmine-flowers, pounds and a half; cinnamon, cloves, three drachms: put these into an alembic, with four gallons water, and draw off three gallons, rate fire: to this water add seven proof spirit, in which a dram of two drachms of saffron has been cify with fine sugar, and run the through the filtrating bag.

All these different kinds of ro-
cellent cordials, good in all depre-
spirits, nauseas, and paralytic dis-

CHAP. LI.

Of Usquebaugh.

USQUEBAUGH, is a very celebrated cordial, the basis of which is saffron. There are different ways of making this famous compound; but the following are equal to any I have seen.

Recipe for Ten Gallons of common Usquebaugh.

Take of nutmegs, cloves, and cinnamon, of each two ounces; of the seeds of anise, caraway and coriander, of each four ounces; liquorice-root sliced, half a pound; bruise the seeds and spices, and put them, together with the liquorice, into the still, with eleven gallons of proof spirits, and two gallons of water: distill with a pretty brisk fire till the fumes begin to rise. But as soon as your still begins to work, fasten to the nose of the worm two ounces of *English* saffron tied up in a cloth, that the liquor may run through it, and extract all its tincture; and in order to this you should often press the saffron with your fingers. When the operation is finished, dulcify your goods with fine sugar.

*Recipe for making Ten Gallons
Usquebaugh. v*

Take of cinnamon, ginger, and
seed, of each three ounces; nutmeg
and a half; mace, cloves, and cub
one ounce and a half. Bruise these
and put them into an alembic wit
lons of proof spirit, and two gallo
and distill till the fairs begin to ri
four ounces and a half of *English s*
a cloth to the end of the worm, as d
preceding recipe. Take raisins,
pounds and a half; dates, three po
rice-root sliced, two pounds; digest
hours in two gallons of water; s
clear liquor, add it to that obtained
tion, and dulcify the whole with fi

Recipe for Ten Gallons of Usquebaugh

Take of raisins stoned, five pound
one pound and a half; cinnamon, l
nutmegs, three ounces; cloves and
one ounce and a half; liquorice
saffron four ounces: bruise the spi
liquorice, and pull the saffron in p
these ingredients eight days in te

proof spirit, in a vessel close stopped ; then filter the liquor, and add to it two gallons of *Canary* wine, and half an ounce of the tincture of ambergris.

*Recipe for making Ten Gallons of French
Usquebaugh.*

Take of saffron three ounces, of the essential oil or essence of Florentine citron, bergamot, *Portugal* orange, and lemon, of each a hundred drops ; angelica-seed, vanellos, and mace, of each one ounce and a half ; cloves and coriander-seed, of each three quarters of an ounce ; bruise the seeds and spices, and put all into an alembic with eleven gallons of proof spirit, and two gallons of water ; and draw off with a gentle fire till the fumes begin to rise, fastening to the nose of the worm four ounces of saffron in a cloth. When the operation is finished, dulcify the goods with fine sugar.

These waters are excellent cephalic cordials, and alexipharmics ; and are excelled by nothing in suddenly reviving the spirits, when depressed by sickness, &c.

CHAP. LII.

Of Ratafia.

RATAFIA is a liquor in great esteem; most persons are acquainted with it; the true method of making it is known to a few. There are various kinds of it made from different fruits. I shall give recipes for making those which are at present in vogue, which may serve as instances for making goods from any other kinds of fruit.

Of Red Ratafia.

There are three sorts of ratafia made from red fruits, distinguished by the names *dry*, and *common*.

The fruits most proper to make ratafia are the black heart cherry, the red cherry, the black cherry, the honey cherry, the strawberry, the red gooseberry, and the mulberry.

These fruits should be gathered at the best of their respective seasons, and the most beautiful of them chosen for

Thus with regard to the heart cherry, it should be large, fleshy, and thorough, but not over ripe ; for then a part of its juice will be evaporated on the tree ; care must be also taken, that its colour be not decayed ; but clear and almost transparent, and well tasted.

The black cherry, or, as it is often called, the black arvon, must be extremely ripe, because it is used to colour the ratafia when that of the other fails. The criterion of judging when it is thoroughly ripe, is its blackness ; for, when in perfection, it is perfectly black. It should also be remembered that this fruit is better and more profitable in proportion to its sweetness ; as the flavour of the ratafia will be rendered more agreeable, and a less quantity of sugar necessary.

As the gooseberry is an acid fruit, it must be chosen as ripe as possible. The fruit large, and the skin and husk so transparent as to see the seeds through it. The gooseberry should be used immediately after its being gathered ; for it is very liable to ferment, which will inevitably spoil the ratafia. Gooseberries are chiefly used to render the ratafia dry or sharp, and consequently less soft ; and therefore their quantity should always be proportioned to that intention,

The merry cherry, to be good, should be black, the skin transparent, full of a deep black purple colour. The quantity should be taken, that it be fresh gathered, and not rotten. It corrects the acid juice of other fruits by its sweetness, softens the disposition, and is of great service in colic and flatulency, ratafia.

The mulberry is of the greatest service in colouring the ratafia. It should be chosen of a deep purple colour, and fully ripe, at which time it is of a deep purple colour. Its taste also greatly contributes to render the ratafia of a pleasant and agreeable flavour.

The strawberry greatly contributes to the rich flavour of the ratafia; but it should be chosen ripe, and large; fresh gathered, and not bruised. Another caution necessary in the choice of fruit is, that they are gathered in dry weather; for if gathered in rainy weather, they will want that fine taste, for which the ratafia is greatly valued.

The raspberry is also added to the richness of the liquor, to which its juicy and fleshy taste greatly contributes; by

acidity it renders the flavour more brisk and agreeable. It must be fresh gathered, full ripe, and free from spots and mouldiness, which the fruit is particularly subject to.

Having thus concisely enumerated the qualities requisite in the several fruits, to render the ratafia of a rich and elegant flavour, we shall proceed to give the best methods for making ratafia from them.

Recipe for making red Ratafia fine and soft.

Take of the black heart cherries, twenty-four pounds; black cherries, four pounds; raspberries and strawberries, of each three pounds; pick these fruits from their stalks, and bruise them; in which condition let them continue twelve hours; press out the juice, and, to every pint of it add a quarter of a pound of sugar. When the sugar is dissolved, run the whole through the filtrating bag, and add to it three quarts of clean proof spirits. Then take of cinnamon, four ounces, of mace, an ounce; and of cloves, two drachms. Bruise these spices, put them into an alembic with a gallon of clean proof spirits, and two quarts of water, and draw off a gallon with a brisk fire. Add as much of

this spicy spirit to your ratafia as agreeable to your palate; about one usual proportion.

Ratafia made according to the will be of a very rich flavour, and elegant. It may be rendered more or less of your, by adding or diminishing the spirit distilled from the spices.

Some, in making ratafia, suffer the juices of their fruits to ferment several days; this means the vinosity of the ratafia is increased; but, at the same time, the elegance of the fruits greatly diminished. If the ratafia be desired stronger and more vinous, it may be done by adding more of the expressed juice; by which method the flavour of the fruits may be preserved, and the ratafia rendered stronger.

It is also a method with some to suspend the fruits in a linen rag, and suspend them in the spirit. But if this method be taken, it will not be necessary to augment the quantity of spirit from the expressed juice. There is no great difference in the two methods of adding the spirit, but that by suspending them in the ra-

quor is generally rendered less bright and transparent.

There is also another method practised in making ratafia, which is this : take the quantity of fruit proposed, bruise it, and immediately pour the spirit on the pulp. After standing a day or two, express the juice or spirit, filtrate it, and add the sugar and spices as before. But this method requires more spirit than the former, as it will be impossible to press it all out of the skins, and other parts of the fruit remaining, after the juice is extracted.

Of making fine and dry Ratafia from red Fruit.

Though the ratafia we have just mentioned will doubtless please the palates of many people, yet there are others who would prefer a different sort ; it is therefore necessary to know how to make dry as well as sweet ratafia, if we are desirous of pleasing all sorts of palates.

Dry ratafia is prepared in the same manner as the preceding, but the ingredients are different.

An equal quantity of cherries and gooseberries
L 5 are

are necessary in making dry or because the acidity of the gooseberries requisite flavour to this sort of liquor. At the same time care must be taken that the berries be fully ripe; for other gooseberries are more acid before than afterwards, yet that acidity is not the flavour desired; it is acerb and renders the flavour of the ratafia disagreeable. The same observation holds good with regard to the cherries; they must be ripe in making the soft ratafia.

Instead of black cherries, used in the preparation of the preceding ratafia, mulberries may be used in this: the reason for this is that the juice of the black cherry is more acid and glutinous than that of the mulberry, and therefore less fit for making the liquor. The mulberries must be the ripest possible, in order to give the best flavour to the liquor.

More spirit and less sugar in the preparation of the juice of the fruit is also required in this position than in the foregoing; but with regard to the spices, the same quantities are added to both.

Recipe for making red Ratafia, fine and dry.

Take of cherries and gooseberries, of each thirty pounds; mulberries, seven pounds; raspberries, ten pounds. Pick all these fruits clean from their stalks, &c. bruise them, and let them stand twelve hours; but do not suffer them to ferment. Press out the juice, and to every pint add three ounces of sugar; when the sugar is dissolved, run it through the filtrating bag, and to every five pints of liquor add four pints of clean proof spirit; together with the same proportion of spirit drawn from the spices in the foregoing composition.

But it may not be amiss to observe here, that different Distillers use different quantities of the spirit drawn from the spices. The best method therefore is to imitate the flavour most universally approved of, which may be easily done, by adding a greater or less proportion of the spiced spirit.

Of mixed Ratafia.

By mixed ratafia is meant the juices of fruits prepared, and ready to be mixed with the spirit when called for.

Recipe for making mixed Ratafia

Ratafia is composed of cherries and brandy; of these the best are to be chosen, and in that condition suffered to stand several days to ferment. The juice is then pressed off, the quantity of sugar and brandy added, the whole put into a cask, and closed. A lee or sediment will fall to the bottom of the cask, which sediment will be of great use in serving the ratafia.

The proportion of black cherries is to be used in this ratafia, because the colour, which is greatly valued for, chiefly comes from that fruit.

The sugar must not be put in at once, lest the acidness of the liquor would occasion a considerable effervescence, but by a little at a time.

These instructions being observed, the preparation of this kind may be easily made. No spirit is not to be mixed with it, though it is called for, a large quantity of it is used, at a small expence, when the fruit is in season, which cannot be done by any other methods.

Recipe for making mixed Ratafia.

Take of common cherries, thoroughly ripe, four hundred and fifty pounds; gooseberries, large and ripe, two hundred and twenty-five pounds; black cherries, ripe and large, fifty pounds. Bruise these fruits, and in that condition let them continue three or four days to ferment: then press out the juice, and add one fifth part of spirit; that is, if you have two hundred and fifty pints of juice, you must add to it fifty pints of spirit. When your spirit and juice are mixed, put them into a cask, and for every pint add three ounces of sugar. By this means your ratafia will be always ready to mix with spirit.

But as this proportion of spirit is but small, it will be necessary to taste your ratafia, at least, every month, lest it should ferment, and by that means lose both its flavour and colour. As soon therefore, as you perceive the least alteration in your ratafia, more spirit must be added to stop the fermentation; and by this method it may be kept the whole year.

If you have any ratafia remaining at the end of the year, you must mix it with that just made, adding a large proportion of black cherries; be-
cause

cause the colour in the old ratafia equal to that of the new. Or you may add to your old ratafia a proper quantity of juice of black cherries, which will give it the colour, and, in a great measure, its strength, so that if your ratafia has been weak, it will, when mixed with fresh juice of black cherries, be but little inferior to the new.

Of White Ratafia.

As red fruits are the basis of the red ratafia, so, on the contrary, that made from the juices of white fruits is denominated white ratafia.

There are various kinds of ratafia made from various fruits; but I shall only give the method of making three or four sorts, which will be sufficient for all the rest, as the method is the same in all.

Recipe for making Ratafia from the white Frontiniac Grape.

The berries of this kind of grape are small, and grow extremely close upon the stem, which are very long, and have conical shoulders; the fruit, when ripe, has a

ky flavour; but it is commonly very late in the autumn before these grapes are in perfection; and the berries being so very close upon the bunches, detain the moisture in the centre, so that they often perish: to prevent which some curious persons look over their vines, soon after the grapes are formed, and with a pair of scissors, cut out all small ones, so as to leave the others at a moderate distance, whereby the sun and air are easily admitted, which dissipates the moisture, and prevents their perishing. There is another kind of this grape, called by some the white *Frontiniae* of *Alexandria*, and by others the *Jerusalem muscat*, which is a very large grape, and when ripe, an excellent fruit; but is rarely brought to perfection in *England*. The berries of the *Jerusalem muscat* are of an oval shape, and very large. They grow very loose on the bunches, are very fleshy and firm, and when ripe, are of a greenish white, and a delicate flavour.

Either of these kind of grapes will make very fine ratafia; but which ever of them are chosen, they must be picked from the stalks, and only the finest berries made use of. The stones must also be picked out; for if they are bruised with the berries, the fine flavour of the juice will be greatly diminished.

When

When you have picked the grapes, stalks, and taken out the stones, press the juice, and filtrate it through a flannel. Then add the quantity of sugar and flavour it to your mind, with a spirit from spices, in the manner explained.

The general proportion of sugar and spirit to twenty pints of the juice, five pounds of sugar, ten pints of spirit, and a quantity you please of the spicy spirit.

To make the spicy spirit, take of nutmegs, four ounces; spirit of wine, four pints, and draw off the whole in *Balneo*.

By the same method you may make a spirit from the red *Frontiniac*; except the grapes, when bruised, must be suffered to stand three or four days before the juice is pressed out; because the colour, which residually in the skins of the grapes, will not be means be extracted.

The berries of the red muscat, or *Frontiniac*, are about the size of those of the white muscat, but grow much thinner on the bunch. The grape, when thoroughly ripe, has the

and highest flavour of any yet known: but it must have a dry soil and a south aspect, otherwise it seldom ripens well in *England*. Besides the above grape, there is another, called by some, red muscat of *Alexandria*, and by others, red *Jerusalem* muscat. This is not quite so late in ripening as the white muscat of *Alexandria* above described; and for that reason more esteemed. The berries of this kind are not quite so large as those of the white, but of the same form, and equal in goodness.

Of Ratafia from Peaches.

The ratafia made from the peach is the finest and richest flavour of any made from stoned fruits. It is, however, necessary to gather the peach when thoroughly ripe, but at the same time, not to suffer it to hang too long on the tree: for, as on the one hand, it will not acquire its delicious flavour and smell till thoroughly ripe, so, on the other, it will lose both if suffered to hang on the tree after it has attained to a full maturity. Another necessary caution is to gather it in fine warm weather, and near the middle of the day, because then both the flavour and smell are in the greatest perfection.

It

It is also requisite to make choice of the best sorts of peaches; for there is a great difference in the flavour of these. The French distillers reckon above thirty sorts, but not more than half that number for making ratafia. I shall therefore give a short description of those that are best, that the young distiller may not be misled in making ratafia from peaches.

1. The early purple (called by the French *pourprée hâtive*.) This tree hath small flowers, the flowers large and open; the fruit round, and of a fine red colour, the flesh white, but very red at the stone; the juice, which has a rich vinous flavour. This peach is ripe about the middle of June.

2. The large, or *French mignon*. The leaves of this tree are smooth, and the flowers small and open. The fruit is a little oblong, swelling out on one side, and of a fine red colour. The juice is very sweet, and of a rich flavour. The flesh white, but very red at the stone. The seed is small, and easily separates from the flesh. This peach is ripe in the middle of June.

3. The *chevreuse*, or *belle chevreuse*.

tree hath smooth leaves, and its flowers are small and contracted. The fruit is of a middling size, a little oblong, and of an elegant colour. The flesh is white, but very red at the stone, from which it separates; full of a rich sugary juice, and ripens toward the latter end of August.

4. The red magdalen, called by the *French* about *Paris*, *Magdeleine de Courson*. The leaves of this tree are deeply sawed, and the flowers large and open. The fruit is large, round and of a fine red colour. The flesh is white, but very red at the stone, from which it separates. The juice is very sugary and of a rich flavour. It is ripe the latter end of August.

5. *Smith's Newington*. This tree hath sawed leaves, and large open flowers. The fruit is of a middling size, and of a fine red next the sun. The flesh is very firm and white, but very red at the stone, to which it closely adheres. It has a rich sugary juice, and is ripe the latter end of August.

6. The chancellor. The leaves of this tree are smooth and the flowers small and contracted. The fruit is shaped somewhat like the belle chévreuse, but rounder. The flesh is white and melting,

melting, and separates from the stone. The skin where it is of a fine red colour. The juice remarkably rich. It is ripe at the end of August.

7. The *bellegarde*; or, as the French call it, the *gallande*. This tree hath narrow leaves, and small contracted flowers. The fruit is large and round, and of a deep purple colour on the side exposed to the sun. The flesh is white, melting, and separates from the stone, where it is of a deep red colour. The juice is very rich. This peach is ripe at the beginning of September.

8. The *bourdine*. The leaves are smooth, and the flowers small and white. The fruit is large, round, and of a deep red colour next the sun. The flesh is white, melting, and separates from the stone, where it is of a fine red colour. The juice is very rich. It is ripe at the beginning of September. It is greatly esteemed by the curious.

9. The *Lisle*; or, as the French call it, the *petite violette hâtive*. This tree hath narrow leaves, and small contracted flowers. The fruit is of a middle size, and next the

violet colour. The flesh is of a pale yellow, melting, full of a rich vinous juice; but adheres to the stone, where it is very red. This fruit is ripe the beginning of September.

10. The old *Newington*. The leaves of this tree are sawed, and the flowers large and open. The fruit is fair, large, and of a beautiful colour next the sun. The flesh is white, melting, and closely adheres to the stone, where it is of a deep red colour. The juice is very rich and vinous. It ripens about the middle of September.

11. The *rambouillet*, commonly called the *rambullion*. This tree hath smooth leaves, and large open flowers. The fruit is of a middling size, rather round than long; deeply divided by a furrow in the middle; of a fine red colour next the sun, but of a light yellow next the wall. The flesh is melting, of a bright yellow colour, except near the stone, from which it separates, where it is of a deep red. The juice is rich and of a vinous flavour. This fruit ripens about the middle of September.

12. The *pourprée*, or, as the *French* generally call it, *Pourprée tardive*, the late purple. The leaves of this tree are very large, and sawed, the
shoots

shoots strong, and the flowers small and contracted. The flesh, except near the stone which it separates, and where it is melting, and of a rich sugary juice. It is ripe till near the end of September.

13. The nevette. The leaves of this tree are sawed, and the flowers small and contracted. The fruit is large, somewhat longer than broad, of a bright red colour next the sun, and pale yellow on the other. The flesh is white, full of a rich juice, and very red near the stone from which it separates. It ripens in the middle of September, and is esteemed one of the best peaches.

14. The royal. This tree hath smooth leaves and small contracted flowers. The fruit is round, and of a deep red on the side next the sun, but of a pale yellow on the other. The flesh is white, melting, and full of a rich juice, except near the stone which it separates, where it is of a red colour. This fruit is ripe about the middle of September.

15. The monstrous pavy of pompadour. The leaves of this tree are smooth, the

and open. The fruit is very large and round, many times fourteen inches in circumference. The flesh is white, melting, and closely adheres to the stone, where it is of a deep red colour. The side next the sun is a beautiful red, and the other of a pale flesh colour. It ripens about the end of October, and when the autumn is warm, is an excellent peach.

The above description of the different kinds of peaches proper for making ratafia, will be of use to the young artist, as the fine flavour of this liquor in a great measure depends on a proper choice of the fruits used in the composition; and if the instructions relating to the perfections and ripeness of these fruits are observed, an excellent cordial may be easily made in the following manner:

Take your peaches, bruise them, and instantly strain out their juice through a piece of strong linen. In this juice, without any mixture of water, dissolve your sugar; and when the sugar is melted, add the quantity of spirit. No spices must be used in this ratafia, the fine flavour of the peach being far preferable to all spices in the world. The quantity of either the sugar or spirit may be augmented or lessened according to

to your own judgment, or in proportion to the price of your ratafia.

As soon as the spirit is added to the juice of the peaches, the whole must be pressed through a flannel bag, put into bottles, and stoppered; for the fine flavour of the peaches will be lost, unless the bottles are very close. Some also cover the cork with wax, which is not a bad caution.

If you would have your ratafia of a red colour, you must let your bruised peaches lie in spirit a day or two; by which means the colour of the skin, and that of the flesh will be extracted, and give your ratafia the colour desired.

Of Orange-flower Ratafia

The orange-flower has been already mentioned on page 123. I shall therefore only mention that the orange-flowers used in making ratafia must be large, in their full perfection, gathered in the morning, rising of the sun, and carefully picked, without stalks, &c. Some blanch the orange-flowers, putting them into a small quantity of water, and boiling them a few minutes over the

by this method the most volatile parts of the flower are evaporated, by which the ratafia will lose much of its delicate flavour.

The best way, therefore, is to use the orange-flowers, without any previous boiling.

*Recipe for making Ten Gallons of Orange-flower
Ratafia.*

Take of orange-flowers, fresh gathered, and clean picked from their stalks, &c. five pounds, and infuse them six days in five gallons of clean proof spirit. Dissolve fourteen pounds of sugar in five gallons of water; and after straining the spirit from the flowers, mix it with the syrup, and filtrate the whole through a flannel bag.

Some instead of common water use the orange-flower water; but it will be necessary in pursuing that method to take care that the water be fresh made, and very fragrant: for, otherwise, instead of improving, you will greatly injure the fine flavour of your ratafia.

The foreign distillers keep two sorts of orange-flower ratafia; one they call *single*, and the other
M *double*.

double. The former is made according to the above receipt; but in making the latter, double the quantity of orange-flowers, and considerably augment the proportion of spirit: it will be needless to give a receipt for this sort of ratafia, which they call double ratafia; the process is exactly the same.

Ratafia of Portugal Orange

Ratafia may be made from any sort of orange; but that of the *Portugal* orange is the best.

The oranges must be chosen fairly ripe; and the outer or yellow peel must be taken off. The juice of the oranges must then be pressed out, dulcified with sugar, and mixed with the spirit: after which the orange peel is to be added, and after a proper time, the whole filtrated through a flannel bag.

Recipe for making Three Gallons of Orange Ratafia.

Take of the juice of *Portugal* oranges, three gallons; clean rectified spirit, one

pounds of sugar; and the outer peel of ten oranges. Let the whole infuse a fortnight, and then filter the liquor through a flannel bag.

Some, instead of infusing the peel as directed in the above recipe, put the peel into the spirit, and distill it in *Balneum Mariæ*; after which they add the spirit to the dulcified orange juice, and filtrate it as before.

The foregoing recipes for making ratafia from different fruits, &c. will be sufficient to instruct the young distiller in the method necessary to be pursued for making cordials of this kind ; for it would be tedious to give formulas for making all kinds of ratafia kept by different distillers. The method in all is nearly the same ; and the proportion of sugar and spirit may be easily discovered by a few experiments. I shall therefore conclude this chapter with giving a recipe for making what is called by our *English* distillers ratafia, though a very bad composition.

Recipe for making Ten Gallons of common Ratafia.

Take of nutmegs, eight ounces; bitter almonds, ten pounds; Lisbon sugar, eight pounds;
M 2 ambergris

ambergris, ten grains: infuse these three days in ten gallons of clean and filter through a flannel bag for

The nutmegs and bitter almond bruised; and the ambergris rubbed with Lisbon sugar in a marble mortar, are infused in the spirit.

CHAP. LIII.

Of Gold Cordial.

THIS cordial has its name from being formerly used in its composition; but later experiments have abundantly demonstrated that gold can add nothing to its value, and is now generally omitted.

Recipe for making Ten Gallons of Gold Cordial.

Take of the roots of angelica, four pounds; raisins stoned, two pounds; coriander seed, a pound; caraway-seeds and cinnamon, half a pound; cloves, two ounces; liquorice-root, of each one pound; put in eleven gallons; water, two gallons: the liquorice, and figs, must be sliced, l

are added. Digest two days, and draw off by gentle heat, till the faints begin to rise, hanging in a piece of linen fastened to the mouth of the worm an ounce of *English* saffron. Then dissolve eight pounds of sugar in three quarts of rose water, and add it to the distilled liquor. Some distillers, instead of saffron, colour their goods with burnt sugar, but by this means the cordial is greatly impaired in its virtues. Or,

Take of the juice of alchermes, five ounces; cloves, two ounces and a half; musk and ambergris, of each half a drachm; loaf-sugar, ten pounds; proof spirit, eleven gallons: digest the whole a fortnight in a close vessel, and filter through a flannel bag for use. Some add thirty leaves of gold; but the medicine is not at all the better for it.

Either of the above recipes will produce an excellent cordial; good in tremblings, faintings, and lowness of spirits, &c. also in nauseas and griping pains of the stomach and bowels.

CHAP. LIV.

Of Cardamum, or All-fo

THIS water has its name from the ingredients in its composition ; and it is greatly used by the poorer s

Recipe for making Ten Gallons of

Take of pimento, caraway, and fennel seeds, and lemon-peel, of each t of malt spirits, eleven gallons ; and water, eleven gallons. Draw off with a gentle heat, and add with ordinary sugar, and make up to the strength you desire with clean

This is rarely called for, unless by a sort of people, who are induced to use it by its cheapness ; though it is a better remedy than many drawn from dearer ingredients. It is an excellent carminative, and is often called *mirabilis*.

C H A P. LV.

Of Geneva.

THERE was formerly kept in the apothecaries' shops a distilled spirituous water of juniper; but the vulgar being fond of it as a dram, the distillers supplanted the apothecaries, and sold it under the name of Geneva. The common sort, however, is not made from juniper-berries, as it ought to be, but from oil of turpentine; the method of which we shall give in the sequel of this chapter.

Juniper-berries are a roundish fruit, of the size of a pea. They wither and wrinkle in the drying, and we meet with them variously corrugated, and usually covered with a bluish resinous dust when fresh. They should be chosen fresh, plump, full of pulp, and of a strong taste and smell. They are usually imported from *Germany*, though we have plenty of the trees in *England*. It is but small with us, rarely rising to more than three or four feet in height, and scarcely ever exceeding five or six. Some of the juniper shrubs are males, some females of the same species; the male shrubs produce in April

or May a small kind of juli with apico very large, and full of farina; the fruit produce none of the juli, but only those which do not ripen till the second year, then do not immediately fall off, so it is no uncommon thing to see three sets of fruit, or the berries of three different years on the same tree.

If you make use of *English* berries, let them be fully ripe before they are gathered. In order to preserve them, spread them out on a boarded floor, leaving the windows and doors open, and turn them once a day till they are dry; after which pack them up in casks so that no air may come to them, and they will keep good all the year. Some, when they are dry, throw them altogether in a heap in a corner of the room, where they continue till they are for use: but the berries will not keep by this method, as by being packed in casks they are subject to contract a mouldiness, which will give a taste to the goods greatly to the disadvantage.

Some distillers, as soon as their berries are gathered, put them into casks, and fill them with spirits of wine; by this method

are indeed well preserved, without any danger of contracting an ill smell, which they are very apt to do by the other methods, unless the greatest care be taken; but then it must be remembered, that the spirit will extract great part of their essential oil, in which their virtues consist, and consequently the berries themselves will be rendered of little value. If, therefore, you preserve your berries in this manner, you should put into each cask or jar, only the quantity you use for one charge of your still; and when you have occasion to use them, put both the spirits and berries into your alembic.

Thus your berries will be finely preserved, without any loss either of their essential oil, or the spirits made use of to preserve them.

Recipe for making Ten Gallons of Geneva.

Take of juniper-berries, three pounds; proof spirit, ten gallons; water, four gallons. Draw off by a gentle fire till the faints begin to rise, and make up your goods to the strength required with clean water.

The distillers generally call those goods which are made up proof by the name of Royal Geneva;

for the common sort is much below
gallons of spirit being sufficient for
lons of geneva. Nay, what is gene
the common alehouses is made in th
manner:

Take of the ordinary malt spirits,
oil of turpentine, two ounces; bay
handfuls. Draw off by a gentle fire t
begin to rise, and make up your g
strength required with clean water.

In this manner is the common ge
and it is surprising that people shou
themselves to drink it for pleasure.

There is a sort of this liquor calle
geneva, from its being imported fro
which is greatly esteemed.

The ingredients used by the *Dut*
ever, the same as those given in th
of this chapter, only instead of mal
use *French* brandy. In the first p
Treatise we have sufficiently shew
of *French* brandy, and in what its
consists; and, also, that by the hel
spirit, cordial waters may be made w

goodness as those drawn with *French* brandy. If, therefore, the distiller be careful in distilling and rectifying his malt spirit, he may make *geneva* equal to that of the *Dutch*, provided it be kept to a proper age; for all spirituous liquors contract a softness and mellowness by age, impossible to be imitated by art.

CHAP. LVI.

Of Cherry Brandy.

THIS liquor is greatly called for in the country, and is made different ways. Some press out the juice of the cherries, and having dulcified it with sugar, add as much spirit to it as the goods will bear, or the price it is intended to be sold for. But the common method is to put the cherries clean picked into a cask, with a proper quantity of proof spirit, and after standing eighteen or twenty days, the goods are drawn off into another cask for sale, and about two-thirds of the first quantity of spirits poured into the cask upon the cherries. This is suffered to stand about a month to extract the whole virtue from the cherries, after which it is drawn off as before; and the cherries pressed to take out the spirit they had absorbed. The proportion of

m 6
cherries

cherries and spirit is not very nicely the general rule is to let the cask be filled with cherries, and then filled up with spirits. Some add to every twenty spirit, half an ounce of cinnamon, and cloves, and about three pounds of which the flavour of the goods is considerably increased. But in order to save expence only the spices and sugar are generally used, but also a great part of the cherries, a deficiency supplied by the juice of elder. Your own reason, therefore, and the price you can sell your goods for, must direct the choice of your ingredients.

By the same method you may make cherry brandy; and if the colour of the goods is not deep enough, it may be improved by the addition of cherry brandy.

CHAP. LVII.

Of Honey Water.

THIS water has its name from the addition of honey to its composition; though that ingredient is of very little service to the water, if used according to the usual method.

Recipe for making a Gallon of Honey Water.

Take of the best honey and coriander seeds, of each one pound; cloves, one ounce and a half; nutmegs, and gum Benjamin, of each an ounce; vanilloes, number four; the yellow rind of three large lemons: bruise the cloves, nutmegs, coriander-seeds, and Benjamin, cut the vanilloes in pieces, and put all into a glass alembic, with one gallon of clean rectified spirit, and after digesting forty-eight hours, draw off the spirit in *Balneum Mariæ*. To a gallon of the above spirit, add damask-rose water, and orange-flower water, of each a pound and a half; musk and ambergris, of each five grains. Grind the musk and ambergris, with some of the water in a glass mortar, and afterwards put altogether into a digesting vessel, shaking them well together, and let them circulate three days and three nights in a gentle heat, then let all cool; filter and keep the water in bottles well stopped for use.

This water was first made by that faithful chemist, Mr. *George Wilson*, for King *James II.* It is an anti-paralitic, smooths the skin, and gives one of the most agreeable scents imaginable. Forty or sixty drops put into a pint of clean water, are sufficient for washing the hands and face; and

and the same proportion to punch, dial water, gives a very agreeable

CH A.P. LVIII.

Of Uncqualled Water, generally
French Name l'Eau sans Par

THERE are two sorts of this drawn considerably below proof, re by filtration, and the other without the receiver being removed as soon as to rise. The latter is much the dearer than the former.

Recipe for making a Gallon of the co
sans Pareille.

Take the outer peels of twelve cit quarts of fine proof spirit, and a quar Put all into a glass alembic, and disti ness in *Balneum Mariæ*: filter the v put it into bottles well stopped.

This is the common sort, and w nerally sold here under the name *Ea reille*.

*Recipe for making a Gallon of the best Sort of
Eau sans Pareille.*

Take of the essence of cedrat, bergamot, orange, and lemon, of each two drachms; rectified spirit, a gallon; water, two quarts. Put all into a glass alembic, and distill in *Balneum Mariæ* till the faints begin to rise, when the receiver must be immediately removed.

Some, to save the trouble and expence of distillation, mix the essences with the spirit of wine, in the manner before mentioned in the chapter for making *Hungary* water; but this is greatly inferior to that made by distillation.

CHAP. LIX.

Of the Water of Bouquet.

THIS water has its name from its inventor, and is greatly esteemed abroad for its smell. It is indeed drawn from the most odoriferous flowers, and therefore it is no wonder that it is held in great esteem.

Recipe

Recipe for making a Gallon of Bouquet

Take of the flowers of white lily
nish jessamine, of each half a pound
 flowers, and those of the jonquil a
 each four ounces; damask roses,
 Let those be fresh gathered, and
 put into a glass alembic with a gal
 proof spirit, and two quarts of wa
 the alembic in *Balneum Mariæ*, dra
 faints begin to rise. You may use sp
 instead of proof spirit; but it will b
 necessary that it be entirely inco
 otherwise your water will fall short
 sired perfection.

CHAP. LX.

Of Cyprus Water.

THIS water is only a dilute tinct
 bergris; but as it is used by those w
 of that perfume, and known by th
 Cyprus Water, or *Eau de Cypre*, I
 omit giving the recipe here, intendin
 full account of ambergris in a
 chapter.

Recipe for making a Gallon of Cyprus Water.

Take of the essence of ambergris, half an ounce; put it into a glass alembic, with a gallon of spirit of wine, and two quarts of water. Place the alembic in *Balneum Mariæ*, and draw off till the faints begin to rise.

C H A P. LXI.

Of Vestal Water, or Eau de Vestale.

THIS is a very agreeable water, and has been long in use in several parts of *Europe*.

Recipe for making a Gallon of Vestal Water.

Take of the seeds of *daucus creticus*, or candy carrots, two ounces; spirit of wine, a gallon; water, two quarts. Distill in *Balneum Mariæ*, till the faints begin to rise. Then add to the spirit drawn over an ounce of the essence of lemons, and four drops of the essence of ambergris; re-distill in *Balneum Mariæ*, and keep the water in bottles well stopped for use.

CHAP. LXII.

Of Beauty Water, or Eau de

THIS water has its name from washing the face, and giving a smell. It is drawn from thyme and which gives it a very elegant odour.

Recipe for making a Gallon of Be

Take of the flowery tops of thyme, of each one pound; proof quarts; water, one quart. Draw *neum Mariæ*, till the faints begin keep it close stopped for use.

CHAP. LXIII.

Of Royal Water.

THIS water has its name from being considered as the most excellent of all scents. It is compounded of the cedrat, nard, mace, from whence the most elegant is produced, and no water is at present equal to this. There are two sorts

ter, one produced by a single distillation, and the other by a double distillation, and thence called rectified, or double distilled royal water.

Recipe for a Gallon of Royal Water.

Take of mace, one ounce; nutmegs, half an ounce; essence of cedrat, or bergamot, two drachms; put these into a glass alembic (after bruising the spices) with five quarts of fine proof spirit, and draw off one gallon in *Balneum Mariæ*.

Recipe for making a Gallon of double distilled Royal Water.

Take of mace, one ounce; nutmegs half an ounce; bruise them, and put them into an alembic, with six quarts of fine proof spirit, and draw off five quarts with a gentle fire. Then take the spirit drawn off and put it into a glass alembic, with two drachms of the essence of cedrat, or bergamot, and draw off a gallon in *Balneum Mariæ*.

Either of these recipes will produce an elegant water, but the latter greatly exceeds the former.

C H A P. LXIV.

*Of the Tincture and Essence of Ambergris,
Musk, and Civet.*

1. AUTHORS have been long divided in regard to the origin of ambergris; some regard it for a vegetable juice, which either exudes into the water from the trunks or from some trees growing on the sea-coast, and is collected from their roots which ran out into the sea; some for an animal product, formed either by a secret process from the combs, or the dung of birds; and others very circumstantially recorded that it is produced in the whale. These opinions are now ever, now looked upon as false; and it is now universally allowed to be a mineral, of the number of bitumens. It is a thick and frothy substance, which generally rises up out of the earth in a fluid form, and is collected under water, where it is by degrees collected into the masses we see it in.

Ambergris, in its natural or common state, is a lax and coarse substance of an irregular figure, friable, and so light as to swim in water. It is of a pale grey colour, with

tinge of brown in it; but pieces perfectly and uniformly of this colour are rare; what we usually meet with is composed of whitish, yellowish, and blackish granules; and in proportion as there is more or less of this whitish matter in these masses, it is more or less scented and valuable. It is found in pieces of perfectly irregular figures, and from the bigness of a pea to those of ten, twenty, or more pounds; nay, there have been masses found of more than two hundred weight.

It should be chosen in clean and not over friable pieces, of a pale grey colour, and as uniform as possible in its structure, with small black specks within.

There are two sorts of essences made from this perfume; one without addition of any other odoriferous substance, and the other from ambergris compounded with musk and civet.

Recipe for making the Essence of Ambergris.

Take of ambergris and white sugar-candy, of each three drachms; grind them well together in a glass mortar, adding to them by slow degrees, five ounces of rectified spirit of wine; digest the whole in a matrass, (represented *fig. 8.*) well stopped,

stopped, for four days, and then a clear tincture or essence, which kept in a bottle well stopped for use.

*Recipe for making the compound
Ambergris.*

Take of ambergris and white sugar each two drachms; musk, twelve grains: grind all these well together in a glass mortar, adding, by degrees, for the use of rectified spirit of wine; digest and strain off a clear essence for use, as in the preceding.

2. Musk is a dry, light, and friable substance of a dark blackish colour, with some purplish or blood colour in it. It is somewhat smooth and unctuous to the touch, and of a highly perfumed smell. It is found to us sewed up in a kind of bladder of skin, covered with a brownish hair. These are the real bags in which the musk is contained while on the animal. Musk should be of a very strong scent, and in dry weather; and must be kept close shut in a leaden box, by which means it will retain its smell, and not grow too dry.

Recipe for making the Essence of Musk.

Take of musk and white sugar-candy, of each one drachm; rub them well together in a marble mortar, adding, by degrees, during the rubbing, five ounces of rectified spirit of wine; put the whole into a matrass, digest three days in a gentle heat, and pour off the clear essence, which keep in a bottle well stopt for use. Some add a few grains of civet to their essence of musk, which considerably augments the fineness of the perfume.

3. Civet is produced like musk, in bags growing to the lower part of the belly of an animal. It is of different colours, from a pure lively whitish, to a black; but the nearer it approaches to the white the better it is; of an extremely strong smell, and a bitterish pungent taste.

The essence of civet is rarely used alone, but of great service in making additions to other odoriferous waters, and therefore I shall here give the method of making it.

Recipe for making Essence of

Take of civet and double refined oil of sweet almond each two drachms ; rub them well in a glass mortar, adding, by degrees, of rectified spirit of wine : put the matrass, digest three days in a gentle heat, pour off the clear essence for use. The essences in this chapter are, properly speaking, chemical preparations, and therefore not to be put to the business of the distiller, yet, as they are often added to perfumed waters, and as I have made, I thought the above recipe might be unacceptable to the reader.

CHAP. LXV.

Of Faints, and the Uses they may be put to

IN many of the preceding recipes, the receiver to be removed as soon as the faints begin to rise ; because otherwise the water would contract a disagreeable taste. It is not, however, to be understood that the faints are to be thrown away, nor that the still immediately stopped ; for

from being of no value, notwithstanding they would be of great disadvantage if suffered to run among the more spirituous parts of the goods before drawn off. As soon, therefore, as you find the clear colour of the goods begins to change of a bluish or whitish colour, remove the receiver, place another under the nose of the worm, and continue the distillation as long as the liquor running from the worm is spirituous, which may be known by pouring a little of it on the still head, and applying a lighted candle to it; for if it is spirituous it will burn, but otherwise, not. When the faints will no longer burn on the still head, put out the fire, and pour the faints in a cask for that purpose; and when, from repeated distillations, you have procured a sufficient quantity of these faints, let the still be charged with them almost to the top. Then throw into the still three or four pounds of salt, and draw off as you would any other charge, as long as the spirit extracted is of a sufficient strength; after which the receiver is to be removed, and the faints saved by themselves as before.

The spirits thus extracted from the faints will serve in several compositions as well as fresh; but they are generally used in aniseed water, be-

cause the predominant taste of the entirely cover that they had before from other ingredients.

CHAP. LXVI.

Of Eau de Luce.

Recipe for Two Gallons

TAKE of oil of amber, one ounce, and rectified spirit of wine, four pounds, put them into a bottle, and let them stand five days, shaking the bottle from time to time, by which means the spirit will be impregnated with the oil. Then put in the impregnated spirit, four ounces of tincture of amber finely powdered, and let it stand five days, by which means you will have a tincture of amber, which decant clear.

The tincture of amber being thus prepared, take of the strongest spirit of sal ammoniac, four pounds, and add it to the foregoing tincture, together with eight pounds of high proof spirit of wine. Thus will you obtain a brated water called *Eau de Luce*, which is much in request, and so useful in all faintness and weakness of spirits.

CHAP. LXVII.

A Water for those afflicted with the Stone and Gravel.

Recipe for Three Gallons.

TAKE of the best flowers of the white thorn, eight pounds; of nutmegs bruised, six ounces; infuse them together six days in a close vessel with two gallons of generous white wine, and the same quantity of proof spirits: after which draw the water by a gentle distillation till the faints begin to rise.

This water is of great use in fits of the stone and gravel, a glass of it often procuring ease in the most racking pains of that dreadful distemper.

CHAP. LXVIII.

Of Compound Gentian Water.

Recipe for Five Quarts.

GENTIAN root, sliced, three pounds; leaves and flowers of the lesser centaury, of each eight ounces; infuse the whole in six quarts of proof spirits,

spirits, and one quart of water, and water till the faints begin to rise.

This water is frequently used as a detergent, and commended as a detergent, and vice in dropsies, the jaundice, and obstructions of the viscera; a glass drank twice a day.

CHAP. LXIX.

Of Aromatic Cephalic Water.

THIS water has its name from its smell, and great use in all swimming sickness in the head.

Recipe for Two Gallons.

Nutmegs, mace, cloves, and cinnamon, each two ounces; galangals and cardamoms, of each one drachm; fennel seed, three handfuls; infuse them in nine quarts of proof spirit; and distill two gallons by gentle distillation.

This is an excellent composition; an admirable cordial, and may be rendered more pleasant by sweetening it with sugar.

CHAP. LXX.

A Water for the Scurvy.

THE following composition has been long in the practice of an eminent physician, but never before (that I know of) published; and, therefore, I presume, the following recipe will not be unacceptable.

Recipe for Three Gallons.

Camomile flowers, one handful; juniper berries, four ounces; of the water-dock root, five ounces; of Winter's bark bruised, two ounces; garden and sea scurvy-grass fresh gathered, of each ten handfuls; sassafras-chips, two ounces; nutmegs, bruised, one ounce and a half; water-cresses and brook-lime, of each three handfuls. Digest the whole ten days in three gallons and a half of proof spirit; and draw off three gallons by a gentle distillation.

This is an excellent cordial, and by a continual use, will deterge and cleanse the kidneys, and other parts of the viscera, and enable them to perform their proper functions. It will also remove all foulnesses of the skin, and render it smooth and beautiful.

CHAP. LXXI.

Of Compound Castor Wa

WE have already given an account, page 141, to which the reader

Recipe for a Gallon and an

Of the best *Russia* castor, eight ounces; flowers of lavender, two ounces; saffron, of each one ounce; cinnamon, and a half; mace and cloves, of each one ounce: digest the whole in two gallons of spirit, and draw off two gallons by distillation.

This is an extraordinary cephalic, and is excellent in all disorders which arise from weakness in the nerves. Thirty or forty drops, often taken, in a glass of generous wine, will be found of great service in epilepsies, palsies, head-aches, and other complaints from the same origin.

CHAP. LXXII.

Of the Saffron Cordial.

THIS cordial has its name from saffron being its principal ingredient.

Recipe for Two Gallons.

Of the best *English* saffron, half a pound; nutmegs and mace, of each two ounces; cinnamon and calamus aromaticus, of each one ounce: digest the whole three days in nine quarts of proof spirit, and draw off two gallons with a gentle fire.

This is a powerful cordial, and a small quantity of it is sufficient, in a glass of wine.

CHAP. LXXIII.

Of the Anti-epileptic Cordial.

THIS cordial has its name from its great use in apoplexies, and diseases of the nervous system.

Recipe for One Gallon.

Take of the flowers of lavender, rosemary, marjoram, and sage, of each four handfuls; of
N 4
castor,

castor, four ounces; of camphire, the
of spirit of wine, a gallon and a half
whole four days, and draw off, by a
one gallon. When the receiver is re
into the spirit, forty drops of oil of
drops of oil of amber; and forty d
oils of mace and juniper.

This is an excellent cordial, and v
ders in all spasmodic affections, and
of the nerves, especially those in
Twenty drops is a full dose, in a glass
or other generous wine.

CHAP. LXXIV.

Of Spirit of Scurvy-Grass

THIS spirit has been long in great
powerful against the scurvy.

Recipe for One Gallon.

Scurvy-grass fresh gathered and b
teen pounds; horse-radish root, six p
rit of wine rectified, one gallon; and
of water: digest the whole in a close
days, and draw off a gallon, with a g

This is of great service in all scorbutic cases, and is given from twenty to an hundred drops.

CHAP. LXXV.

Of the Golden Spirit of Scurvy-Grass.

THIS spirit has its name from its golden colour, which it acquires from the gamboge dissolved in it, after drawn from the ingredients.

Recipe for One Gallon.

Take of the foregoing spirit of scurvy-grass, a gallon, and dissolve in it a pound of gamboge, and decant the tinged spirit carefully from the sediment.

This is highly esteemed among the common people; but should be used only by strong constitutions; it may be given from ten to sixty drops.

CHAP. LXXVI.

Of the Aromatic Cordial.

THIS cordial is highly valued in Germany; and would doubtless obtain the same repute here, if equally known.

Recipe for One Gallon

Cinnamon, three ounces; the
 m-m-seeds husked, one ounce and
 pepper and ginger, of each one o
 the whole two days in a gallon an
 proof spirit, and draw off a gallon
 heat.

This cordial deserves to be more
 it is at present, being perhaps e
 thing of the kind hitherto known.

CHAP. LXXVII.

Of the Stomachic Cordi

THIS cordial is much used in
 excellent stomachic; and in all p
 should be equally fond of it, if we
 acquainted with its virtues.

Recipe for a Gallon.

Take of raisins stoned, one pour
 mon, four ounces; of caraway see
 of the lesser cardamum husked,
 ounce; of Virginia snake-root, six

of Winter's bark, three ounces: digest the whole three days in a gallon and a half of proof spirit, and draw off one gallon.

This cordial would prove a much better stomachic than the usual bitters, so commonly drank in wine: the ingredients being far more friendly to nature than those from whence the common bitter tinctures are extracted.

CHAP. LXXVIII.

Of the Cordial of Health.

THIS cordial, which is well known in *Italy*, has its name from its tendency to promote the blessing of health.

Recipe for a Gallon of this Cordial.

Take of the roots of angelica, calamus aromaticus, galangal, gentian, and zedoary, of each one ounce; of the lesser cardamum seeds, cinnamon, long pepper, mace, and nutmegs, of each one ounce and a quarter: digest these ingredients twenty-four hours, in a gallon and a half of proof spirit, and draw off a gallon by a gentle heat.

This is an excellent cordial, and if
with fine sugar, and tinctured with
will be highly agreeable.

CHAP. LXXIX.

Of the compound Cordial of Virginia S

THIS is a new composition, but
bid fair for becoming a favourite cor

Recipe for making One Gall

Take of Virginia snake-root, half
of Venice treacle, four ounces; of
and nutmegs, of each three ounces:
whole in a gallon and a half of pr
and draw off a gallon.

CHAP. LXXX.

Of the Bezoardic Cordial

THIS is one of the most powerf
hitherto discovered, and will probab
in its value, as it is more known in t

Recipe for a Gallon and a Half of the Bezoardic Cordial.

Take of the roots elecampane, angelica, zedary, and Virginia snake-root, of each six ounces; of saffron, four ounces and a half; of myrrha, cinnamon, and dried citron peels, of each three ounces; of the leaves of scordium and rue, of each three handfuls; of Venice treacle, ten ounces; of opium, one ounce; of rectified spirit of wine, a gallon and a half; and of white wine, two quarts: digest the whole ten days in a close vessel, draw off a gallon by a gentle heat, and sweeten the whole with loaf-sugar.

This is only to be taken at going to rest, and will then answer all the intentions of a cordial and cephalic. It may be given from two drachms to an ounce.

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from Orange-peel	-	-	-
from Parsley	-	-	-
from Pennyroyal	-	-	-
from Peppermint	-	-	-
from Piony, &c.	-	-	-
against the Plague	-	-	-
called Ratafia	-	-	-
called Roman	-	-	-
from Ros Solis	-	-	-
called Royal	-	-	-
against the Scurvy	-	-	-
of Dr. Stephens	-	-	-
against a Surfeit	-	-	-
from Venice Treacle	-	-	-
called Vestal	-	-	-
called Usquebaugh	-	-	-
the Wonderful	-	-	-
from Wormwood	-	-	-
for the Stone and Gravel	-	-	-
for the Scurvy	-	-	-
Wine, Oil of, how procured	-	-	-
its Use	-	-	-
Winter's Bark, Description of	-	-	-
Wonderful Water, how made	-	-	-
Wormwood Water, lesser Composition	-	-	-
greater Composition	-	-	-

THE END.





